Bureau of Land Management

Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices

Approved Resource Management Plan Amendment for Greater Sage-Grouse

ATTACHMENT 4

From the USDI 2015 Record of Decision and Approved Resource Management Plan Amendments for the Rocky Mountain Region including the Greater Sage-Grouse Sub-Regions of: Lewistown, North Dakota, Northwest Colorado and Wyoming and the Approved Resource Management Plans for Billings, Buffalo, Cody, HiLine, Miles City, Pompeys Pillar National Monument, South Dakota and Worland

September 2015

BLM

Wyoming

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Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices

Approved Resource Management Plan Amendment for Greater Sage-Grouse

Prepared by
U.S. Department of the Interior
Bureau of Land Management
Wyoming State Office

September 2015

State Director Recommendation for Approval

I hereby recommend for approval this resource management plan amendment.

Mary Jo Rugwell, Acting Wyoming State Director — Date: 9/15/15

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List of Acronyms

ACEC	Area of Critical Environmental Concern
AML	Appropriate Management Level
AMP	Allotment Management Plan
AMR	Appropriate Management Response
AO	Authorized Officer
APD	Application for Permission to Drill
APHIS-WS	Animal and Plant Health Inspection Service—Wildlife Services
ARMPA	Approved Resource Management Plan Amendment
AUM	Animal Unit Months
BA	Biological Assessment
BAER	Burn Area Emergency Rehabilitation
BAR	Burned Area Rehabilitation
BF	Board Feet
BLM	Bureau of Land Management
BMP	Best Management Practices
BOR	Bureau of Reclamation
BpS	Biophysical Setting
BTNF	Bridger-Teton National Forest
CAP	Coordinated Activity Plan
CBNG	Coal Bed Natural Gas
CCAA	Candidate Conservation Agreement with Assurances
CDPA	Coal Development Potential Area
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
CO	Carbon Monoxide
COA	Condition of Approval
COT	Conservation Objectives Team
CSU	Controlled Surface Use
dBA	A-weighted Decibel
DDCT	Density and Disturbance Calculation Tool
DOA	Department of Agriculture
DOE	Department of Energy
DOI	Department of the Interior
DPC	Desired Plant Community

EIS	Environment Impact Statement
ESD	Ecological Site Descriptions
EO	Executive Order
EPA	Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
ES&R	Emergency Stabilization and Rehabilitation
EVT	Existing Vegetation Type
FAA	Federal Aviation Administration
FLPMA	Federal Land Policy and Management Act of 1976
GHMA	General Habitat Management Area
GIS	Geographic Information System
GRSG	Greater Sage-Grouse
HAF	Habitat Assessment Framework
HMA	Herd Management Area
HMAP	Herd Management Area Plans
IDT	Interdisciplinary Team
IM	Instruction Memorandum
INRMP	Integrated Natural Resource Management Plan
JMH	Jack Morrow Hills
LAU	Lynx Analysis Unit
LBA	Lease By Application
LUP	Land Use Plan
MA	Management Area
MBNF	Medicine Bow National Forest
MET	Meteorological Towers
MOU	Memorandum of Understanding
MW	Megawatt
NAAQS	National Ambient Air Quality Standard
NAGPRA	Native American Graves Protection and Repatriation Act
NASA	National Aeronautic Space Administration
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NOI	Notice of Intent

NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
NTT	National Technical Team
OHV	Off-Highway Vehicle
PAC	Priority Areas for Conservation
PFC	Proper Functioning Condition
PHMA	Priority Habitat Management Area
PRPA	Paleontological Resource Preservation Act
RAATS	Reduced Agent-Area Treatments
RDF	Required Design Features
RFD	Reasonable Foreseeable Development
RMP	Resource Management Plan
RNA	Research Natural Area
ROS	Recreation opportunity spectrum
ROD	Record of Decision
ROW	Right-of-Way
SD/MA	Special Designations/Management Areas
SDW	Stock Driveways
SDWA	Safe Drinking Water Act
SFA	Sagebrush Focal Area
S&G	Standards and Guidelines
SGIT	Sage-grouse Implementation Team
SIA	Special Interest Area
SHPO	State Historic Preservation Office
SRMA	Special Recreation Management Area
SRP	Special Recreational Permit
SSC	Species of Special Concern
SUA	Special Use Authorization
SUPO	Surface Use Plan of Operations
T&C	Terms and Conditions
TBNG	Thunder Basin National Grassland
TCP	Traditional Cultural Properties
TLS	Timing Limitation Stipulation
USC	United States Code

USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRM	Visual Resource Management
WAFWA	Western Association of Fish and Wildlife Agencies
WGFD	Wyoming Game and Fish Department
WHMA	Wildlife Habitat Management Area
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WUI	Wildland Urban Interface
WYNDD	Wyoming Natural Diversity Database

1. Introduction

The Federal Land Policy and Management Act of 1976 (FLPMA) directs the U.S. Department of the Interior (DOI), Bureau of Land Management (BLM) to develop and periodically revise or amend its resource management plans (RMPs), which guide management of BLM-administered lands.

This Approved Resource Management Plan Amendment (ARMPA) is the result of the March 2010 U.S. Fish and Wildlife Service (USFWS) 12-Month Finding for Petitions to List the Greater Sage-Grouse (*Centrocercus urophasianus*) as Threatened or Endangered (75 Federal Register 13910, March 23, 2010; USFWS 2010). In that finding, the USFWS concluded that the Greater Sage-Grouse (GRSG) was "warranted, but precluded" for listing as a threatened or endangered species.

The USFWS reviewed the status of and threats to the GRSG in relation to the five listing factors provided in Section 4(a)(1) of the ESA. The USFWS determined that Factor A, "the present or threatened destruction, modification, or curtailment of the habitat or range of the GRSG," and Factor D, "the inadequacy of existing regulatory mechanisms," posed "a significant threat to the GRSG now and in the foreseeable future" (USFWS 2010). The USFWS identified the principal regulatory mechanisms for the BLM as conservation measures in RMPs.

1.1 Description of the Wyoming Sub-Regional Planning Area

The ARMPA planning area boundary includes all lands, regardless of jurisdiction (see **Map 1-1**: **Wyoming Planning Area, Surface Management and Sub-Surface Estate**). **Table 1-1** outlines the amount of surface acres that are administered by specific federal agencies, states, local governments, and lands that are privately owned in the planning area. The planning area includes other BLM-administered lands that are not allocated as habitat management areas for GRSG. The ARMPAs do not establish any additional management for these lands; these lands will continue to be managed according to the existing, underlying land use plan for the areas.

The decision area for the ARMPA is BLM-administered lands in GRSG habitat management areas (see **Map 1-2: Wyoming Planning Area, Greater Sage-Grouse Habitat Management Areas across All Jurisdictions)**, including surface and split-estate lands with BLM subsurface mineral rights. Any decisions in the Rocky Mountain Region ARMPAs apply only to BLM-administered lands, including split-estate lands within GRSG habitat management areas (the decision area). These decisions are limited to providing land use planning direction specific to conserving GRSG and its habitat.

GRSG habitat on BLM-administered lands in the decision area consists of lands allocated as Priority Habitat Management Areas (PHMA) and General Habitat Management Areas (GHMA) (see **Table 1-2**).

PHMA and GHMA are defined as follows:

- PHMA—BLM-administered lands identified as having the highest value to maintaining sustainable GRSG populations. Areas of PHMA largely coincide with areas identified as Priority Areas for Conservation in the USFWS's COT report (USFWS 2013). These areas include breeding, late brood-rearing, winter concentration areas, and migration or connectivity corridors.
- GHMA—BLM-administered lands where some special management will apply to sustain GRSG populations. Areas of occupied seasonal or year-round habitat outside of PHMAs.

The ARMPA also identifies specific Sagebrush Focal Areas (SFA), which are an allocation that is a subset of PHMA (see **Map 1-3: Wyoming Decision Area, Greater Sage-Grouse Habitat Management Areas for BLM Administered Lands)**. The SFA was derived from GRSG stronghold areas described by the USFWS in a memorandum to the BLM titled Greater Sage-Grouse: Additional Recommendations to Refine Land Use Allocations in Highly Important Landscapes (USFWS 2014). The memorandum and associated maps provided by the USFWS identify areas that represent recognized strongholds for GRSG that have been noted and referenced as having the highest densities of GRSG and other criteria important for the persistence of the species.

PHMA (including SFA) and GHMA on BLM-administered lands in the decision area fall within 15 counties in Wyoming (see **Table 1-3**). The habitat management areas also span across two BLM district offices and six BLM field offices (see **Table 1-4**).

The following BLM RMPs are hereby amended to incorporate appropriate GRSG conservation measures:

- Casper RMP (BLM 2007)
- Kemmerer RMP (BLM 2010)
- Newcastle RMP (BLM 2000)
- Pinedale RMP (BLM 2008a)
- Rawlins RMP (BLM 2008b)
- Rock Springs—Green River RMP (BLM 1997a) and Jack Morrow Hills (JMH) Coordinated Activity Plan (CAP) (BLM 2006).

Table 1-1
Land Management in the Planning Area

Surface Land Management	Total Surface Land Management Acres
Bureau of Land Management (BLM)	11,133,600
Forest Service (USFS)	4,671,100
National Grasslands (managed by USFS)	242,100
Bankhead Jones (managed by USFS)	310,000
Fish & Wildlife Service	46,200
National Park Service	10,800
Department of Defense	57,800
Bureau of Reclamation	244,800
Other Federal Agencies	11,800
State Lands	2,406,600
State Parks and Historic Sites	31,200
Wyoming Game & Fish Department	84,400
Local Government	9,200
Private Lands	19,286,800
Total acres	**38,546,400**

Source: BLM Wyoming State Office GIS 2015

Table 1-2
Acres of PHMA and GHMA in the Decision Area for the ARMPA

Surface Land Management	Priority Habitat Management Areas	General Habitat Management Areas
BLM-administered Surface Estate	4,895,100	6,032,500
BLM-administered Mineral Estate	6,929,000	13,416,700
Source: BLM Wyoming State Office GIS 2015 PHMA: Priority Habitat Management Areas GHMA: General Habitat Management Areas		

Table 1-3
Acres of GRSG Habitat by County in the Decision Area (BLM Lands only)

ARMPA				
	Priority Habitat Management Area[2]		General Habitat Management Area	
County Name [1]	BLM Surface Estate	BLM Mineral Estate	BLM Surface Estate	BLM Mineral Estate
Albany	97,600	216,000	130,100	398,000
Campbell	-	52,800	-	86,100
Carbon	943,900	1,250,300	1,115,500	1,257,800
Converse	25,400	238,800	97,900	1,197,200
Crook	28,700	78,300	50,100	316,200
Fremont	161,300	169,500	8,400	15,800
Goshen	-	-	100	900
Laramie	-	-	3,900	22,800
Lincoln	438,300	478,000	525,400	610,200
Natrona	710,900	1,366,300	413,400	1,004,300
Niobrara	35,100	118,300	80,200	465,900
Park	-	-	-	-
Platte	-	-	10,600	44,500
Sublette	696,000	894,200	553,800	753,300
Sweetwater	1,581,300	1,625,400	2,684,300	2,680,700
Teton	-	44,500	-	146,800
Uinta	159,100	168,300	319,700	402,500
Weston	17,500	320,000	39,100	378,400
Grand Total	4,895,100	7,020,700	6,032,500	9,781,400

Source: BLM Wyoming State Office GIS 2015
[1]The following counties in the planning area do not contain mapped GRSG habitat: Park County. The following counties in the planning area do not contain BLM-managed surface: Campbell, Park and Teton Counties.
[2]PHMA acres in the proposed plan include 1,909,900 acres in Carbon, Fremont, Lincoln, Natrona, Sublette, and Sweetwater Counties associated with SFAs.

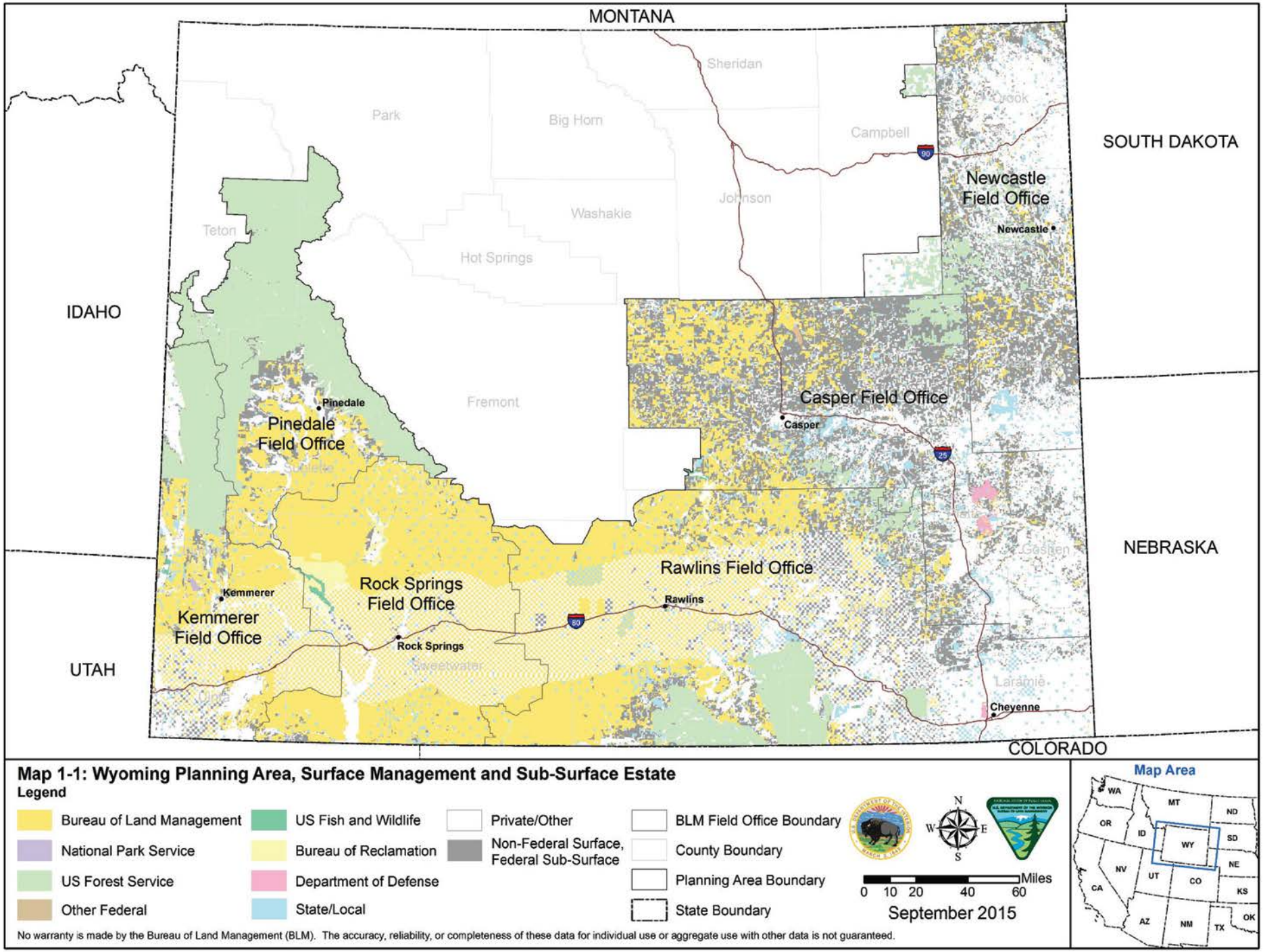
Table 1-4
Acres of GRSG Habitat by BLM Field Office in the Decision Area (BLM Lands only)

BLM Office	ARMPA		
	PHMA[1]	GHMA	TOTAL
Casper Field Office	736,300	522,000	1,258,300
Kemmerer Field Office	619,000	782,100	1,401,100

Table 1-4
Acres of GRSG Habitat by BLM Field Office in the Decision Area
(BLM Lands only)

BLM Office	ARMPA		
	PHMA[1]	GHMA	TOTAL
Newcastle Field Office	81,300	169,400	250,700
Pinedale Field Office	351,800	557,900	909,700
Rawlins Field Office	1,434,000	2,075,500	3,509,500
Rock Springs Field Office	1,672,700	1,925,600	3,598,300
Total Acres	**4,895,100**	**6,032,500**	**10,927,600**

Source: BLM Wyoming State Office GIS 2015
[1]Includes 1,909,900 acres of SFAs in the Casper Field Office, Kemmerer Field Office, Pinedale Field Office, Rawlins Field Office, and Rock Springs Field Office.



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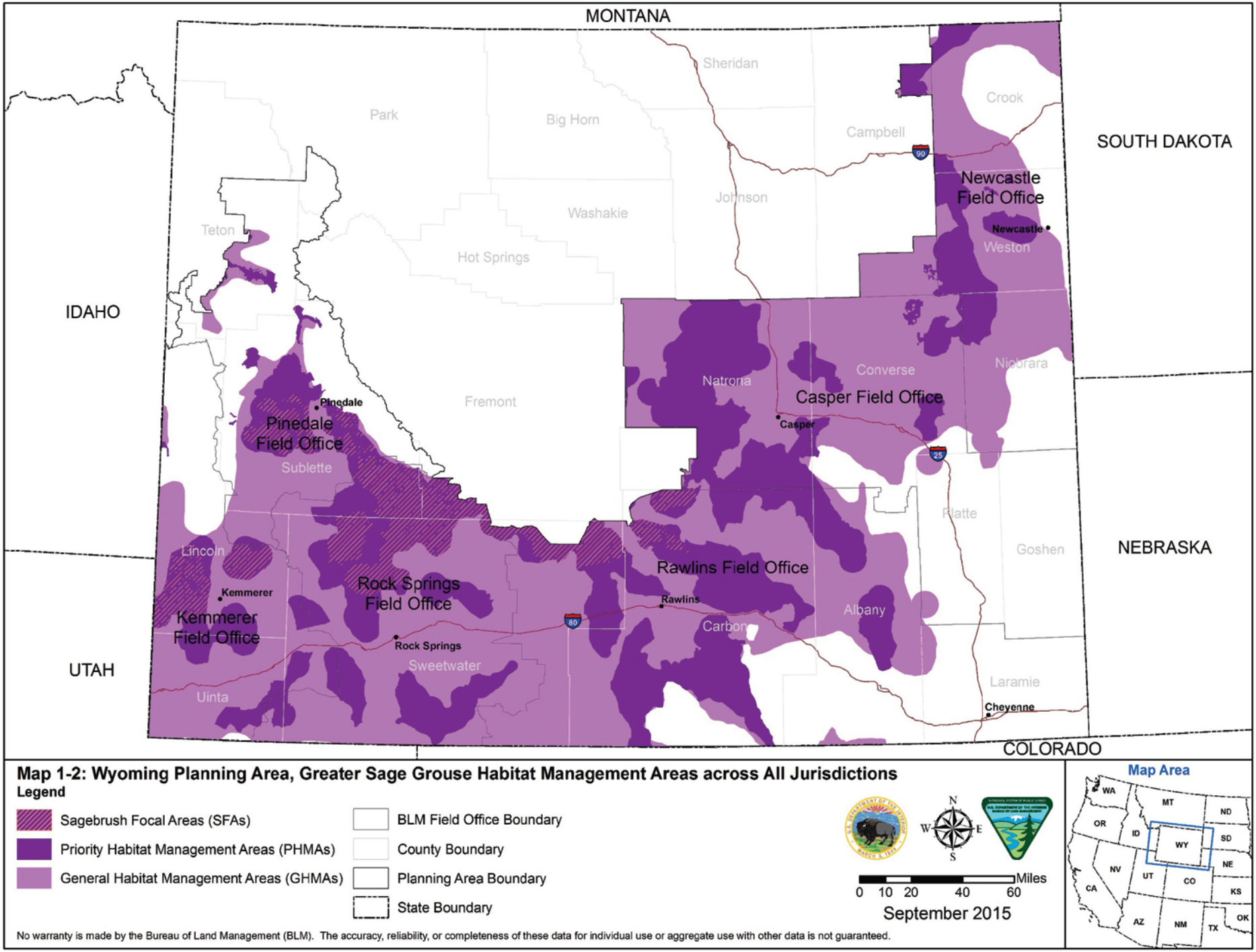
MONTANA
SOUTH DAKOTA
NEBRASKA
COLORADO
UTAH
IDAHO
Sheridan
Crook
Park
Big Horn
Campbell
Johnson
Washakie
Teton
Hot Springs
Newcastle Field Office
Newcastle
Weston
Converse
Niobrara
Natrona
Fremont
Casper Field Office
Casper
Pinedale
Pinedale Field Office
Sublette
Platte
Goshen
Lincoln
Rawlins Field Office
Rock Springs Field Office
Kemmerer
Rawlins
Albany
Kemmerer Field Office
Carbon
Rock Springs
Sweetwater
Uinta
Laramie
Cheyenne
Map 1-2: Wyoming Planning Area, Greater Sage Grouse Habitat Management Areas across All Jurisdictions
Legend
Sagebrush Focal Areas (SFAs)
Priority Habitat Management Areas (PHMAs)
General Habitat Management Areas (GHMAs)
BLM Field Office Boundary
County Boundary
Planning Area Boundary
State Boundary
N
W
E
S
0 10 20 40 60 Miles
September 2015
Map Area
WA
MT
ND
OR
ID
WY
SD
NV
UT
CO
NE
CA
KS
AZ
NM
TX
OK
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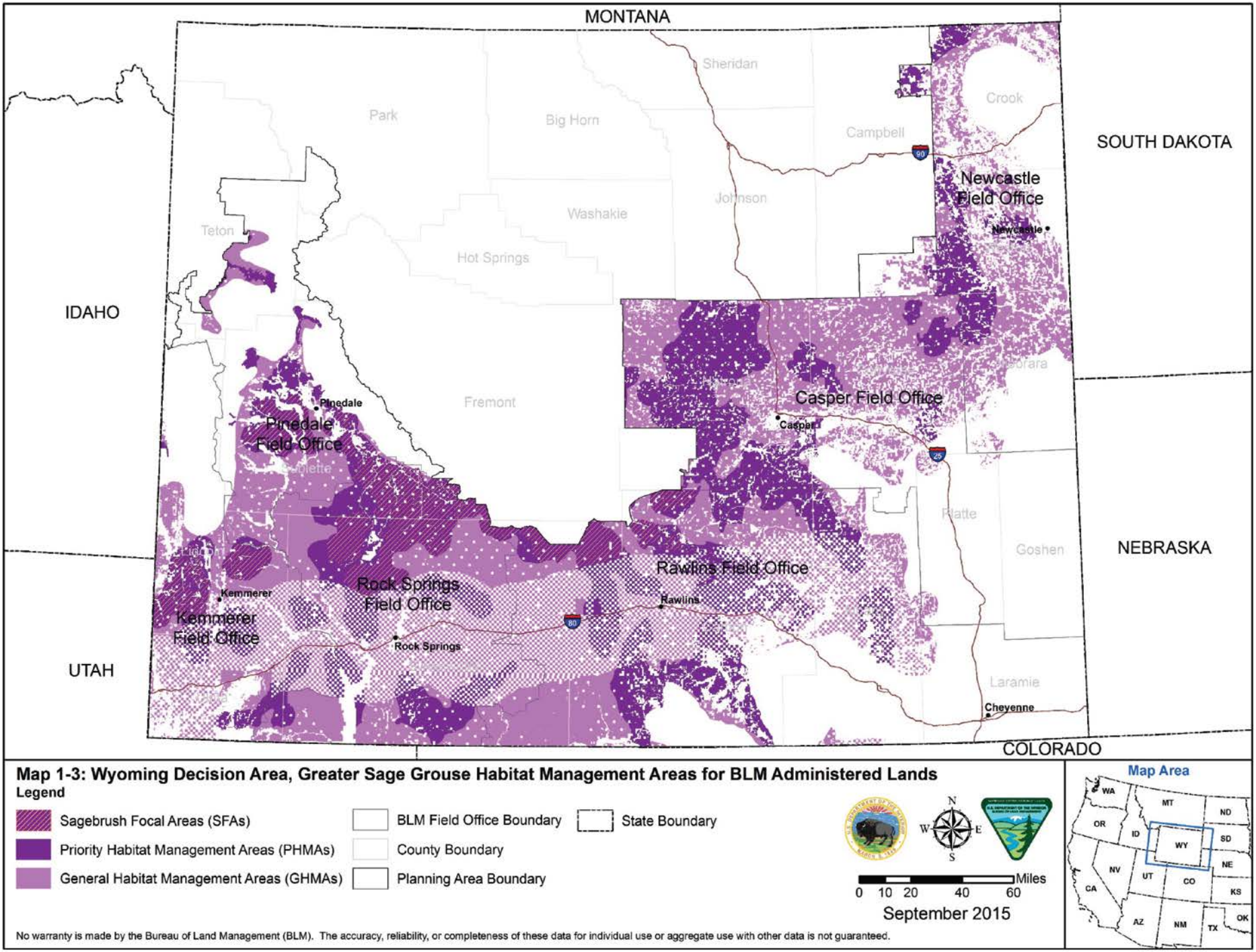

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1.2 Purpose and Need

The BLM has prepared this ARMPA with an associated EIS to amend RMPs for Field Offices/District Offices containing GRSG habitat. This planning process is needed to respond to the USFWS's March 2010 "warranted, but precluded" ESA listing petition decision for GRSG. The USFWS identified (1) the present or threatened destruction, modification, or curtailment of habitat or range and (2) the inadequacy of existing regulatory mechanisms as significant threats, and identified the principal regulatory mechanisms for the BLM as conservation measures incorporated into land use plans. The purpose for the ARMPA is to identify and incorporate appropriate measures in existing land use plans to enhance, and restore GRSG habitat by avoiding, minimizing, or compensating for unavoidable impacts to GRSG habitat in the context of the BLM's multiple use and sustained yield mission under FLPMA. Changes in management of GRSG habitats are necessary to avoid the continued decline of populations across the species' range. This ARMPA focuses on areas affected by threats to GRSG habitat identified by the USFWS in the March 2010 listing decision and in the USFWS 2013 COT Report.

The major threats to GRSG or GRSG habitat on BLM-administered lands in the Wyoming sub-region are the following:

- Oil and gas development—fragmentation of GRSG habitat due to mineral exploration and development
- Hard rock mining—fragmentation of GRSG habitat due to mineral exploration and development
- Infrastructure—fragmentation of GRSG habitat due to human development activities, such as rights-of-way (ROW) and renewable energy development
- Invasive species—conversion of GRSG habitat to cheatgrass-dominated plant communities
- Wildfire—loss of large areas of GRSG habitat due to wildfire
- Conifer invasion—encroachment of pinyon or juniper into GRSG habitat
- Grazing—loss of habitat components due to improper livestock grazing
- Human uses—fragmentation of GRSG habitat or modification of GRSG behavior due to human presence and activities.

Because the BLM administers a large portion of GRSG habitat in the affected states, changes in GRSG habitat management are anticipated to have a considerable beneficial impact on present and future GRSG populations.

1.3 Wyoming Sub-regional GRSG Conservation Summary

The ARMPA identifies and incorporates measures to conserve, enhance, and restore GRSG habitat by avoiding, minimizing, and compensating for unavoidable impacts of threats to GRSG habitat. The ARMPA addresses threats to GRSG and its habitat identified by the GRSG National Technical Team (NTT), by the USFWS in the March 2010 listing decision, as well as those threats described in the USFWS's 2013 Conservation Objectives Team (COT) report. Per the COT Report, the USFWS identified threats by GRSG population across the range and stated whether that threat is present and widespread, present but localized, or unknown for that specific population. **Table 1-5** identifies the GRSG populations and the threats identified by the COT contained within the Wyoming Sub-region.

Table 1-5
Threats to GRSG in the Wyoming Sub-region as Identified by the Conservation Objectives Team (COT 2013)

Threats are characterized as: Y = threat is present and widespread, L = threat present but localized, N = threat is not known to be present, and U = unknown.

GRSG Identified Populations from the COT Report Applicable to the Wyoming Sub-region	Unit Number	Isolated Small Size	Sagebrush Elimination	Agriculture Conversion	Fire	Conifers	Weeds/Annual Grasses	Energy	Mining	Infrastructure	Improper Grazing	Free-Roaming Equids	Recreation	Urbanization
Management Zone I: Great Plains														
Powder River Basin (WY)		N	L	N	L	L	**Y**	**Y**	**Y**	**Y**	**Y**	N	**Y**	L
Management Zone II: Wyoming Basin														
Jackson Hole (WY)		**Y**	L	N	L	L	**Y**	N	N	N	N	N	**Y**	L
Wyoming Basin (WY portion)		N	L	N	L	L	L	**Y**	L	**Y**	**Y**	L	**Y**	L
Laramie (WY, CO)		**Y**	N	N	**Y**	**Y**	**Y**	**Y**	U	**Y**	**Y**	N	**Y**	**Y**
N. Park (WY Basin in CO)		N	**Y**	**Y**	**Y**	N	**Y**	**Y**	**Y**	**Y**	**Y**	N	**Y**	**Y**

Table 1-6 provides a crosswalk as to how the ARMPA for the Wyoming Sub-region addresses the threats from the COT Report.

Table 1-6
Key Components of the Wyoming GRSG ARMPA
Addressing COT Report Threats

Threats to GRSG and its Habitat (from COT Report)	Key Component of the Wyoming ARMPA
All threats	• Implement the Adaptive Management Plan, which provides regulatory assurance that unintended negative impacts to GRSG habitat will be addressed before consequences become severe or irreversible. • PHMA: Require and ensure mitigation that provides a net conservation gain to GRSG for actions that result in habitat loss and degradation.
All development threats, including mining, infrastructure, and energy development.	• PHMA: Implement an anthropogenic disturbance cap of 5% at the project-area scale. • PHMA: Implement a density cap of an average of one energy and mining facility per 640 acres.

Table 1-6
Key Components of the Wyoming GRSG ARMPA
Addressing COT Report Threats

Threats to GRSG and its Habitat (from COT Report)	Key Component of the Wyoming ARMPA
	• PHMA: Surface occupancy and surface-disturbing activities would be prohibited on or within a 0.6-mile radius of the perimeter of occupied GRSG leks. • GHMA: Surface occupancy and surface-disturbing activities would be prohibited on or within a 0.25-mile radius of the perimeter of occupied GRSG leks. • Monitor implementation and effectiveness of conservation measures in GRSG habitats according to the Habitat Assessment Framework. • Apply Required Design Features (RDFs) when authorizing actions that affect GRSG habitat. • Effects of infrastructure projects, including siting, will be minimized using the best available science, updated as monitoring information on current infrastructure projects becomes available.
Energy development—fluid minerals, including geothermal resources	• PHMA: Open to fluid mineral leasing subject to No Surface Occupancy (NSO) stipulations within 0.6 miles of an occupied lek, and Timing Limitation (TL) stipulations from March 15 to June 30. • GHMA: Open to fluid mineral leasing subject to NSO within 0.25 miles of an occupied lek and TL stipulations. • Prioritize the leasing and development of fluid mineral resources outside GRSG habitat.
Energy development—wind energy	• PHMA: Avoidance area (may be available for wind energy development with special stipulations).
Infrastructure—major ROWs	• PHMA: Avoidance area (may be available for major ROWs with special stipulations).
Infrastructure—minor ROWs	• PHMA: Avoidance area (may be available for minor ROWs with special stipulations).
Mining—locatable minerals	• SFAs: 252,160 acres would be recommended for withdrawal from the General Mining Act of 1872, subject to valid existing rights
Mining—coal	• PHMA is essential habitat for GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).
Improper livestock grazing	• Prioritize the review and processing of grazing permits/leases in SFAs followed by PHMA. • The NEPA analysis for renewals and modifications of grazing permits/leases will include specific management thresholds, based on the GRSG Habitat Objectives Table, Land Health Standards and ecological site potential, to allow adjustments to grazing that have already been subjected to NEPA analysis. • Prioritize field checks in SFAs followed by PHMA to ensure compliance with the terms and conditions of grazing permits.

Table 1-6
Key Components of the Wyoming GRSG ARMPA
Addressing COT Report Threats

Threats to GRSG and its Habitat (from COT Report)	Key Component of the Wyoming ARMPA
Free-roaming equid management	• PHMA: Review and consider amending BLM Herd Management Area Plans to incorporate GRSG habitat objectives and management considerations for all BLM herd management areas.
Range management structures	• Allow range improvements which do not impact GRSG, or which provide a conservation benefit to GRSG such as fences for protecting important seasonal habitats.
Recreation	• PHMA: Do not construct new recreation facilities.
Fire	• PHMA: Fuels treatments would be designed and implemented with an emphasis on protecting existing sagebrush ecosystems and enhancing and protecting future sagebrush ecosystems.
Nonnative, invasive plant species	• Integrated vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species. Manage weed treatments to maintain and improve GRSG habitat.
Sagebrush removal	• PHMA: Maintain all lands ecologically capable of producing sagebrush (but no less than 70%) with a minimum of 15% sagebrush cover or as consistent with specific ecological site conditions. • All BLM use authorizations will contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives for GRSG.
Pinyon and/or juniper expansion	• Remove conifers encroaching into sagebrush habitats in a manner that considers tribal cultural values, prioritizing occupied GRSG habitat.
Agricultural conversion and urban development	• Retain the majority of PHMA in federal management.

The ARMPA also identifies and incorporates measures for other uses and resources that are designed to conserve, enhance, and restore GRSG habitat. Specifically, the ARMPA requires the following summarized management decisions, subject to valid existing rights:

- Providing a framework for prioritizing areas in PHMA and GHMA for wildfire, invasive annual grass, and conifer treatments
- Reducing habitat disturbance and fragmentation through limitations on surface-disturbing activities
- Adapting to resource and use changes through monitoring and adaptive management
- Including GRSG habitat objectives in land health standards.

The ARMPA also establishes screening criteria and conditions for new anthropogenic activities in PHMAs and GHMAs and requires a net conservation gain for sage-grouse populations and habitat, consistent with the State of Wyoming Core Area Strategy. The ARMPA will reduce habitat disturbance and fragmentation through limitations on surface-disturbing activities, while addressing changes in resource condition and use through monitoring and adaptive management.

The ARMPA is built upon the foundation for GRSG management established by and complementary to the Governor's Executive Order 2011-05, Greater Sage Grouse Core Area Protection (Core Area Strategy), State of Wyoming Executive Department (2011), by establishing similar conservation measures and focusing

restoration efforts in the same key areas most valuable to the GRSG. On July 29, 2015, the State of Wyoming issued Executive Order 2015-4 which replaced Executive Orders 2011-5 and 2013-3. Through the Governor's Consistency Review of the Plan, it was determined that guidance and recommendations provided in EO 2015-4 were consistent with Proposed RMP issued on May 29, 2015. Therefore, throughout the plan, references to the State of Wyoming's Core Area Protection strategy were updated to reference EO 2015-4. In addition, EO 2015-4 modified the Core Area boundaries, the boundary changes are inconsistent with the maps and acreages presented in the Proposed RMP and therefore EO 2011-5 remains the reference for the Core Area boundaries. The plan is designed to protect GRSG and its habitat within core areas using a suite of tools and mechanisms that work in concert to conserve sage-grouse by reducing habitat loss and fragmentation through lek buffers, disturbance limits, excluding activities, and a sophisticated mapping utility to monitor the amount and density of disturbance. The plan provides consistent GRSG habitat management across the range, prioritizes development outside of GRSG habitat, and focuses on a landscape-scale approach to conserving GRSG habitat.

For a full description of the BLM's ARMPA, see **Section 2**.

1.4 Planning Criteria

Planning criteria are based on appropriate laws, regulations, BLM manual and handbook sections, and policy directives. Criteria are also based on public participation and coordination with cooperating agencies, other federal agencies, state and local governments, and Native American tribes. Planning criteria are the standards, rules, and factors used as a framework to resolve issues and develop alternatives. Planning criteria are prepared to ensure decision-making is tailored to the issues and to ensure that the BLM avoids unnecessary data collection and analysis. Preliminary planning criteria were included in the Draft RMPA/Draft EIS and were further refined for the Proposed RMPA/Final EIS.

Planning criteria carried forward for this ARMPA are as follows:

- The ARMPA is in compliance with FLPMA, and all other applicable laws, regulations, and policies.
- Impacts from the alternatives were analyzed in accordance with regulations at 43 CFR 1610, 36 CFR 219, and 40 CFR 1500.
- Lands covered in the ARMPA are public land managed by the BLM within the designated planning areas. No decisions have been made relative to non-BLM lands.
- The ARMPA recognizes the state's responsibility and authority to manage wildlife population numbers and the BLM's responsibility to manage habitat; a coordinated effort is necessary to meet both agency's objectives.
- The ARMPA incorporates management decisions brought forward from existing planning documents whenever possible. Where more restrictive land use allocations or decisions are made in existing RMPs, those more restrictive land use allocations or decisions remain in effect and are not amended by the ARMPA.
- The planning team worked cooperatively and collaboratively with cooperating agencies and all other interested groups, agencies, and individuals.
- The BLM and cooperating agencies jointly developed alternatives for resolution of common resource management issues and management concerns.
- GIS and metadata information meet Federal Geographic Data Committee (FGDC) standards, as required by EO 12906. All other applicable BLM data standards were followed.
- All management actions were based on the best available, current, scientific information, research and technology, and inventory and monitoring information.
- The ARMPA includes adaptive management criteria and protocol to address future issues.
- The planning process used mitigation to develop management options and alternatives. The EIS analyzed the impacts, and were part of the planning criteria for developing the options and alternatives and for determining mitigation requirements.

- The BLM utilized the Western Association of Fish and Wildlife Agencies (WAFWA) *Conservation Assessment of Greater Sage-Grouse and Sagebrush Habitats* (Connelly, *et al.* 2004), and any other appropriate resources, to identify GRSG habitat requirements and best management practices.
- The ARMPA is consistent with the BLM's National Sage-Grouse Conservation Strategy.
- The ARMPA complies with NEPA and Council on Environmental Quality regulations at DOI regulations at 43 CFR part 46 and 43 CFR part 1600; the 2008 BLM NEPA Handbook (H–1790–1), and all other applicable BLM policies and guidance.
- The ARMPA is limited to making land use planning decisions specific to the conservation of GRSG habitat.
- The BLM considered allocative and/or prescriptive standards to conserve GRSG habitat, as well as objectives and management actions to restore, enhance, and improve GRSG habitat.
- The BLM used a collaborative and multi-jurisdictional approach, where appropriate, to determine the desired future condition of public lands for the conservation of GRSG and their habitat.
- As described by law and policy, the BLM endeavored to ensure that conservation measures are as consistent as possible with other planning jurisdictions within the planning area boundaries.
- The BLM addressed socioeconomic impacts of the alternatives. Socio-economic analysis used IMPact analysis for PLANning (IMPLAN) and Jobs and Economic Development Impact (JEDI), accepted input-output quantitative models, for renewable energy analysis.
- Management of GRSG habitat that intersected with Wilderness Study Areas (WSAs) on public lands administered by the BLM was guided by the BLM Manual 6330, Management of WSAs. Land use allocations made for WSAs are consistent with BLM Manual 6330 and with other laws, regulations, and policies related to WSA management.
- The BLM consulted with Federally Recognized Native American Tribes to identify sites, areas, and objects important to their cultural and religious heritage within GRSG habitat.
- The BLM coordinated and communicated with state, local, and tribal governments. These efforts ensured that the BLM considered provisions of pertinent plans, resolved inconsistencies, and provided ample opportunities for state, local, and tribal governments to comment on the development of ARMPA.
- The most current approved BLM corporate spatial data was supported by current metadata and used to ascertain GRSG habitat extent and quality. Data are consistent with the principles of the Information Quality Act of 2000.
- Wyoming Game and Fish Department's GRSG data and expertise were utilized in making management decisions.
- For BLM-administered lands, all activities and uses within GRSG habitat conform to existing land health standards. Standards and guidelines (S&G) for livestock grazing and other programs that developed guidelines are applicable to all alternatives for BLM lands.

2. Approved Resource Management Plan Amendment

2.1 Approved Resource Management Plan Amendment Instructions

This ARMPA is now the baseline plan for management for GRSG in Wyoming in the High Desert and the High Plains District Offices. The ARMPA adopts the management for the BLM described in the Wyoming Greater Sage-Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement (2015), with modifications and clarifications as described in the Modifications and Clarifications section of the record of decision (ROD).

In the event there are inconsistencies or discrepancies between previously Approved RMPs and this ARMPA, the decisions contained in this ARMPA will be followed unless there are more restrictive decisions in the existing plans. The more restrictive decisions in the existing plans will be implemented. The BLM will continue to tier to statewide, national, and programmatic EISs and other NEPA and planning documents, as well as consider and apply RDFs or other management protocols contained in other planning documents after appropriate site-specific analysis.

All future resource authorizations and actions in GRSG habitat will conform to, or be consistent with, the decisions contained in this ARMPA. All existing operations and activities authorized under permits, contracts, cooperative agreements or other authorizations will be modified, as necessary and appropriate, to conform to this plan amendment within a reasonable timeframe. However, this ARMPA does not repeal valid existing rights on public lands. A valid existing right is a claim or authorization that takes precedence over the decisions developed in this plan. If such authorizations come up for review and can be modified, they will also be brought into conformance with this plan amendment as appropriate.

While the Final EIS for the Wyoming GRSG Proposed LUP Amendment constitutes compliance with NEPA for the broad-scale decisions made in this ARMPA, the BLM will continue to prepare Environmental Assessments (EAs) and Environmental Impacts Statements (EISs) where appropriate as part of implementation level planning and decision-making.

2.2 Goals, Objectives, and Management Decisions

This section of the ARMPA presents the goals, objectives, land use allocations, and management actions established for protecting and preserving GRSG and its habitat on public lands managed by the BLM in Wyoming. These management decisions are presented by program area. Not all types of decisions were identified for each program. A Monitoring Framework is also included (in Appendix D) to describe how the implemented program decisions will be monitored. The goals and objectives considered in the development of the management actions for this ARMPA are listed below.

Management Goals

1. Conserve, restore, and enhance sage-grouse habitat on a landscape scale consistent with local, state, and federal management plans and policies, as practical, while providing for multiple use of BLM-administered lands.

Management Objectives

1. In cooperation with the State of Wyoming and its agencies, local governments, private landowners, local sage-grouse working groups, partners and stakeholders, develop site-specific conservation strategies to maintain or enhance sage-grouse habitats and habitat connectivity.
2. Maintain and enhance quality/suitable habitat to support the expansion of sage-grouse populations on federally-administered lands within the planning area.
3. Manage sage-grouse seasonal habitats and maintain habitat connectivity to support population objectives set by the State of Wyoming in cooperation with the agencies.
4. Identify and prioritize opportunities for habitat enhancement and conservation within sage-grouse core habitat areas based on threats and the ability to manage sage-grouse habitat.
5. Restore native (or desirable) plants and create landscape patterns which most benefit sage-grouse.
6. Develop specific habitat objectives to protect, enhance or restore sage-grouse priority habitat based on Ecological Site Descriptions (ESDs) and BLM land health evaluations (including within wetland and riparian areas) taking into account site history (historic treatments or habitat manipulations) that have changed the soil chemistry, possibly altering the ESD. If an effective grazing system that meets sage-grouse habitat requirements is not already in place, analyze at least one alternative that conserves, restores, or enhances sage-grouse habitat in the NEPA document prepared for grazing management (Doherty et al. 2011, Williams et al. 2011).
7. Establish measurable objectives related to sage-grouse habitat from baseline monitoring data, ESDs, or land health assessments/evaluations.
8. Manage for vegetation composition and structure consistent with ecological site potential to achieve sage-grouse seasonal habitat objectives.
9. Incorporate available site information collected using the Sage-Grouse Habitat Assessment Framework or similar methods to evaluate existing resource conditions and to develop any necessary resource solutions in cooperation with State of Wyoming and its agencies, the local governments, private landowners, project proponents, partners, and stakeholders.
10. Incorporate management practices that will provide for maintenance and/or enhancement of sage-grouse habitats, including specific attention to maintenance of desired understories of sagebrush plant

communities. When developing objectives for residual cover and species diversity, identify the ecological site types within the planning area and refer to the appropriate ESDs.

11. In determining appropriate management actions that will be considered, refer to the document, *Grazing Influence, Management, and Objective Development in Wyoming's Greater Sage-Grouse Habitat* (Cagney et al. 2010) for guidance.
12. Identify PHMAs and GHMAs for each WAFWA MZ across the current geographic range of GRSG that are large enough to stabilize populations in the short term and enhance populations over the long term. GRSG habitat in this planning area overlaps two WAFWA MZs: (1) MZ I-Great Plains and (2) MZ II-Wyoming Basin.
13. Protect PHMAs and GHMAs from anthropogenic disturbance that will reduce distribution or abundance of GRSG.
14. Priority will be given to leasing and development of fluid mineral resources, including geothermal, outside of PHMAs and GHMAs. When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMAs and GHMAs, and subject to applicable stipulations for the conservation of GRSG, priority will be given to development in non-habitat areas first and then in the least suitable habitat for GRSG. The implementation of these priorities will be subject to valid existing rights and any applicable law or regulation, including, but not limited to, 30 U.S.C. 226(p) and 43 C.F.R. 3162.3-1(h). Where a proposed fluid mineral development project on an existing lease could adversely affect GRSG populations or habitat, the BLM will work with the lessees, operators, or other project proponents to avoid, reduce and mitigate adverse impacts to the extent compatible with lessees' rights to drill and produce fluid mineral resources. The BLM will work with the lessee, operator, or project proponent in developing an application for permit to drill (APD) for the lease to avoid and minimize impacts to sage-grouse or its habitat and will ensure that the best information about the GRSG and its habitat informs and helps to guide development of such federal leases.
15. In all SFAs and PHMAs, the desired condition is to maintain all lands ecologically capable of producing sagebrush (but no less than 70%) with a minimum of 15% sagebrush cover or as consistent with specific ecological site conditions. The attributes necessary to sustain these habitats are described in *Interpreting Indicators of Rangeland Health* (BLM Tech Ref 1734-6).
16. The habitat objectives (see Tables 2-2 and 2-3) will be part of the sage-grouse habitat assessment to be used during land health evaluations (see Monitoring Framework in Appendix D). These habitat objectives are not obtainable on every acre within the designated GRSG habitat management areas. Therefore, the determination on whether the objectives have been met will be based on the specific site's ecological ability to meet the desired condition identified in the table.
17. Effects of infrastructure projects, including siting, will be minimized using the best available science, updated as monitoring information on current infrastructure projects becomes available.

This section is organized by program area, beginning with the General Management Direction (GMD) which identifies general management actions for GRSG and its habitat. For ease of identification into the future, each program area has identified abbreviations (see below) and each decision in that program is numbered in coordination with the abbreviation.

- General Management Direction**—(GMD)**
- Special Status Species**—(SSS)**
    - Monitoring Effectiveness
    - Density and Disturbance
    - Onsite and Offsite Mitigation
    - Timing and Distance Restrictions
    - Predation
    - Noise
    - Adaptive Management
    - Sagebrush Focal Areas
- Vegetation**—(VEG)**
    - Vegetation Reclamation
    - Grasshopper/Mormon Cricket Control and Management

- Fire and Fuels Management**—(FIRE)**
    - Suppression
    - Fuels Management
    - Post-Fire Management
- Livestock Grazing**—(LG)**
    - Livestock Grazing Permit Monitoring
    - Permit Renewals
    - Range Improvement Projects
    - Livestock Trailing
    - Riparian Area Management
- Wild Horses and Burros**—(WHB)**
- Minerals Resources**—(MR)**
    - Fluid Minerals (Unleased Estate)
    - Fluid Minerals (Leased Estate)
    - Locatable Minerals
    - Salable Minerals
    - Non-Energy Leasable Minerals
    - Solid Leasable Minerals
    - Exceptions to Lease Stipulations, Conditions of Approval, and Terms and Conditions
- Renewable Energy**—(RE)**
- Lands and Realty**—(LR)**
    - Land Use Authorizations
    - Land Tenure
- Recreation and Visitor Services**—(REC)**
- Travel and Transportation**—(TTM)**
- Special Designations and Other Management Areas**—(SDMA)**

Table 2-1 is a summary of the allocation decisions presented for each GRSG habitat management area.

Table 2-1
Summary of Allocation Decisions by GRSG Habitat Management Areas

Resource	PHMA	GHMA
Land Tenure	Retain	Retain
Wind	Avoidance, with some Exclusion	Open
Major ROWs	Avoidance, with some Exclusion	Avoidance, with some Exclusion
Minor ROWs	Avoidance, with some Exclusion	Avoidance, with some Exclusion
Oil and Gas	Open with Major and Minor Stipulations	Open with Major and Minor Stipulations
Geothermal	Open with Major and Minor Stipulations	Open with Major and Minor Stipulations
Non-energy Leasables	Open, with some Closures	Open
Salable Minerals	Open, with some Closures	Open

Resource	PHMA	GHMA
Locatable Minerals	SFA = Recommend Withdrawal Other PHMA = Open with Modifications	Open
Travel Management	Limited	Limited
Livestock Grazing	Open	Open

General Management Direction (GMD)

Management Decisions (MD)

MD GMD 1: Continue to support the development of statewide sage-grouse seasonal habitat models for the State of Wyoming.

MD GMD 2: Field offices will work with project proponents, partners, and stakeholders to avoid or minimize impacts and/or implement direct mitigation (e.g., relocating disturbance, timing restrictions, etc.), and utilize best management practices (BMP). When necessary, offsite compensatory mitigation will be applied consistent with Wyoming's Core Area Strategy.

MD GMD 3: Utilize the Wyoming Sage-grouse Implementation Team (SGIT) and Local Working Group plans or other state plans, analyses, and other sources of information to guide development of conservation objectives for local management of sage-grouse habitats. The BLM will collaborate with appropriate federal agencies, and the State of Wyoming as contemplated under Governor Executive Order 2013-3, to: (1) develop appropriate conservation objectives; (2) define a framework for evaluating situations where GRSG conservation objectives are not being achieved on federal land, to determine if a causal relationship exists between improper grazing (by wildlife or wild horses or livestock) and GRSG conservation objectives; and (3) identify appropriate site-based action to achieve GRSG conservation objectives within the framework**.**

MD GMD 4: Include the collection of baseline data and outline post-project monitoring components in project planning, as appropriate and necessary.

MD GMD 5: The BLM will coordinate new recommendations, mitigation, habitat objectives, and management considerations applied for sage-grouse with the WGFD and other appropriate agencies, local government cooperators, and the Wyoming SGIT. These measures will be analyzed in site-specific NEPA documents, and planning level documents, as necessary.

MD GMD 6: Apply appropriate seasonal restrictions for implementing vegetation management treatments according to the type of seasonal habitats present within GRSG habitat. Vegetation treatments must include monitoring to determine achievement of objectives and their long-term success.

MD GMD 7: Ensure site-specific, measurable, conservation and mitigation objectives are included in project planning within sage-grouse habitats.

MD GMD 8: Each BLM field office will develop landscape-scale restoration, conservation, and maintenance strategies, including special management of seasonal habitats and identified connectivity zones outside of PHMAs, working with voluntary partners and cooperating agencies. These strategies and habitat designations must be coordinated and reconciled with Wyoming's Greater Sage-Grouse Core Area Protection strategy (EO 2015-4), and where possible, with adjoining management entities that share habitats or populations.

MD GMD 9: Design all projects in a manner that minimizes potential for invasive species establishment. Monitor and treat invasive species associated with all permitted activities consistent with BLM Handbook H-1740-2.

MD GMD 10: Apply all appropriate required design features (Appendix C) as mandatory Stipulations/Conditions of Approval (COA)/Terms and Conditions within PHMAs for all program areas as applicable.

MD GMD 11: Integrated vegetation management will be used to control, suppress, and eradicate, where possible, noxious and invasive species per BLM Handbook H-1740-2. Manage weed treatments to maintain and improve GRSG habitat. RDFs and BMPs will be applied to the permit as Conditions of Approval as determined through the site-specific analysis.

MD GMD 12: Existing notices and approved plans of operations under 43 CFR 3809: For projects that overlap PHMAs, operators may be requested to submit modifications to the accepted notice or approved plan of operations so that the operations minimally impact PHMAs (core only). The Authorized Officer (AO) may convey to the operator suggested conservation measures, based upon the notice or plan level operations and the geographic area of those operations (also called the project area, which is defined in 43 CFR 3809.5). These suggested conservation measures include measures that support the overall goals and objectives of the priority/core population area strategy and may not be reasonable or applicable to the BLM's determination of whether the proposed operations will cause unnecessary or undue degradation under 43 CFR 3809.5. The request containing the suggested conservation measures must make clear that the operator's compliance is not mandatory.

Notices or plans of operation, or modifications thereto, submitted following the issuance of this guidance: As part of the 15-day completeness review of notices (or modifications thereto) and 30-day completeness review of plans of operations (or modifications thereto), the proposed project area(s) where exploration, development, mining, access and reclamation would take place will be reviewed for overlap of sage-grouse PHMAs in the corporate geographic information system (GIS) database. If there is overlap, the BLM AO may notify the operator of ways that they may minimize impacts to PHMAs (core only) and request the operator to amend its notice or plan to include such measures. The request to amend the submitted notice or plan of operations must make clear that the operator's compliance is not mandatory and that including such measures is not a requirement for completeness of either the notice or a plan of operations, nor is it a condition of acceptance of the notice or approval of the plan of operations.

MD GMD 13: As new occupied sage-grouse habitat is found or occurs either through additional inventories or expansion into previously unoccupied habitat, the BLM will incorporate, through appropriate processes and analyses, these areas into the GHMA category and manage them as such, until the earliest review occurs by the SGIT. At that time, they will be considered for PHMA status or continue to be managed as GHMAs and will be added to the statewide map.

MD GMD 14: Contribute to actions that help to ground-truth the statewide sage-grouse seasonal habitat models for the State of Wyoming.

MD GMD 15: Use the Sage-grouse Habitat Assessment Framework or best available assessment tool (approved by the AO) when assessing or evaluating sage-grouse habitats at multiple scales.

MD GMD 16: The official Wyoming sage-grouse lek database is maintained by the WGFD in accordance with Appendix 4B of the Umbrella Memorandum of Understanding (MOU) between the WGFD and BLM (WGFD and BLM 1990).

The MOU states that agencies will meet at least annually to coordinate and review the accuracy of data, and incorporate the most up-to-date information.

MD GMD 17: Many sage-grouse seasonal habitats within and outside of PHMAs (core only) are encumbered by valid existing rights, such as mineral leases or existing rights-of-way. Fluid mineral leases often will include less stringent lease stipulations than the timing, distance, and density requirements identified for consideration in this plan. The BLM will work with proponents holding valid existing leases that include less stringent lease stipulations than the timing, distance, and density restrictions described within this plan to ensure that measurable sage-grouse conservation objectives (such as, but not limited to, consolidation of infrastructure to reduce habitat fragmentation and loss, and effective conservation of seasonal habitats and habitat connectivity to support management objectives set by the WGFD) are included in all project proposals.

MD GMD 18: PHMAs will be designated as OHV Limited Areas. The OHV limitation will ultimately be to "Designated Routes" as determined through a subsequent implementation/activity level Travel Management Plan. In the interim, motorized use on existing routes may occur; however, no new routes may be created without specific authorization.

MD GMD 19: Complete activity-level travel plans within five years of the record of decision (ROD) for this planning effort. During activity level planning, where appropriate, designate routes in PHMAs with current administrative/agency purpose or need to administrative access only. Existing plans shall be assessed for consistency with sage-grouse conservation objectives.

MD GMD 20: Construct roads needed for production activities to minimum design standards within PHMAs, in compliance with the Density and Disturbance Calculation Tool (DDCT) process.

MD GMD 21: Field office staff will work with project proponents (including those within the BLM) and the WGFD to site their projects in locations that meet the purpose and need for their project, utilize the DDCT, and have been determined to contain the least sensitive habitats.

MD GMD 22: Evaluate opportunities to coordinate management plans and strategies on multiple allotments where coordination under a single management plan/strategy will result in enhancing GRSG populations or its habitat, as determined in coordination with the state wildlife agency and with project proponents, partners, and stakeholders.

MD GMD 23: Existing RMP decisions will be retained unless vacated or modified by decisions in this ARMPA. Where more restrictive land use allocations or decisions are made in existing RMPs, those more restrictive land use allocations or decisions will remain in effect and will not be amended by this ARMPA.

MD GMD 24: Fire and fuels management actions will be designed to contribute to the protection and enhancement of sagebrush habitat that support GRSG populations (including large contiguous blocks of sagebrush).

MD GMD 25: BLM planning units (Districts), in coordination with the USFWS and relevant state agencies, will complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive Species Habitat Assessments to prioritize at-risk habitats, and identify fuels management, preparedness, suppression and restoration priorities necessary to maintain sagebrush habitat to support interconnecting GRSG populations. These assessments and subsequent assessment updates will also be a coordinated effort with an interdisciplinary team (IDT) to take into account other GRSG priorities identified in this plan. Appendix L describes a minimal framework example and suggested approach for this assessment.

Implementation actions will be tiered to the Local (District) Greater Sage-Grouse Landscape Wildfire & Invasive Species Assessment using the best available science related to the conservation of GRSG.

In coordination with USFWS and relevant state agencies, the BLM planning units (Districts) will identify annual treatment needs for wildfire and invasive species management as identified in local unit level

Landscape Wildfire and Invasive Species Assessments. Annual treatment needs will be coordinated across state/regional scales and across jurisdictional boundaries for long-term conservation of GRSG.

These landscape assessment implementation efforts will be reviewed annually with appropriate USFWS and state agency personnel.

MD GMD 26: Implement a coordinated inter-agency approach to fire restrictions based upon National Fire Danger Rating System (NFDRS) thresholds (fuel conditions, drought conditions, and predicted weather patterns) for GRSG habitat.

MD GMD 27: Within acceptable risk levels, utilize a full range of fire management strategies and tactics, including the management of wildfires to achieve resource objectives across the range of sage-grouse habitat consistent with land use plan direction.

Special Status Species (SSS)

Seasonal Habitat Objectives for GRSG

Table 2-2
Seasonal Habitat Objectives for GRSG Wyoming Basin Ecoregion

Attribute	Indicators	Desired Condition[6]	Reference
BREEDING AND NESTING (Seasonal Use Period March 1-June 15)			Doherty 2008. Holloran and Anderson, 2005.
Lek Security	Proximity of trees	Trees absent or uncommon on shrub/grassland ecological sites within 1.8 miles (approx. 3 km) of occupied leks.	Baruch-Mordo, S., J. S. Evans, J. P. Severson, D. E. Naugle, J. D. Maestas, J. M. Kiesecker, M. J. Falkowski, C. A. Hagen, and K. P. Reese 2013. Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
	Proximity of sagebrush to leks	Adjacent protective sagebrush cover within 330 ft. (approx. 100 m) of an occupied lek.	Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
Cover	% of seasonal habitat meeting desired conditions	>80% of the nesting habitat meets the recommended vegetation characteristics, where appropriate (relative to ecological site potential, etc.).	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Sagebrush cover[2]	5 to 25%	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000. Connelly, J. W., K. P. Reese, and M. A. Schroeder 2003. Hagen, C. A., J. W. Connelly, and M. A. Schroeder 2007.
	Sagebrush height Arid sites[3] Mesic sites[4]	 4-31 inches (10-80cm) 12-31 inches (30-80cm)	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.

Table 2-2
Seasonal Habitat Objectives for GRSG Wyoming Basin Ecoregion

Attribute	Indicators	Desired Condition[6]	Reference
	Predominant sagebrush shape	Predominantly spreading shape[5]	Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
	Perennial grass cover (such as native bunchgrass)[2] Arid sites[3] Mesic sites[4]	 ≥10% ≥15% Cool-season bunchgrasses preferred	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000. Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press). Cagney J., E. Bainter, B. Budd, T. Christiansen, V. Herren, M. Holloran, B. Rashford, M. Smith and J. Williams 2010.
	Perennial grass and forb height (including residual grasses)	Adequate nesting cover of ≥7" or as determined by ESD site potential and local variability	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000. Connelly, J. W., K. P. Reese, and M. A. Schroeder 2003. Doherty, K.E., D.E. Naugle, J.D. Tack, B.L Walker, J.M. Graham and J.L. Beck 2014. Hagen, C. A., J. W. Connelly, and M. A. Schroeder 2007. Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
	Perennial forb cover[2] Arid sites[3] Mesic sites[4]	 >5% >10%	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
BROOD-REARING/SUMMER[1] (Seasonal Use Period June 16-October 31)			
Cover	% of Seasonal habitat meeting desired condition	>40% of the summer/brood habitat meets recommended brood habitat characteristics where appropriate (relative to ecological site potential, etc.)	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Sagebrush cover[2]	5-25%	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Sagebrush height	4 to 32 inches (20.3-80cm)	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Perennial grass cover and forbs[2]	>5% arid sites >10% mesic sites	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Riparian areas/mesic meadows[2]	Proper Functioning Condition	Preferred forbs are listed in Stiver et al. (in press).

Table 2-2
Seasonal Habitat Objectives for GRSG Wyoming Basin Ecoregion

Attribute	Indicators	Desired Condition[6]	Reference
	Upland and riparian perennial forb availability	Preferred forbs are common with several preferred species present	Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
WINTER[1] (Seasonal Use Period November 1-February 28)			
Cover and Food	% of seasonal habitat meeting desired conditions	>80% of the wintering habitat meets winter habitat characteristics where appropriate (relative to ecological site, etc.).	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Sagebrush cover above snow[2]	>5%	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000. Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
	Sagebrush height above snow	>10 inches (>25cm)	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.

[1] Where credible data support different seasonal dates than those identified, dates may be shifted but the amount of days cannot be shortened or lengthened by the local unit.
[2]Absolute cover is the actual recorded cover and can exceed 100% when recorded across all species and all layers. It is not relative cover, which is the proportions of each species, and equals 100%. Note that cover is reported for only those species (e.g., sagebrush, preferred forbs) that are sampled to determine suitability of habitat for sage-grouse. Overall cover at the site will be greater than that sampled for sage-grouse habitat, due to other species present.
[3]Arid corresponds to the 10 – 12 inch precipitation zone; *Artemisia tridentata wyomingensis* is a common big sagebrush sub-species for this type site (Stiver et al. *In Press*).
[4]Mesic corresponds to the ≥12 inch precipitation zone; *Artemisia tridentata vaseyana* is a common big sagebrush sub-species for this type site (Stiver et al. *In Press*).
[5]Collectively the indicators for sagebrush (cover, height, and shape), perennial grass and perennial forb (cover, height and/or availability) represent the desired condition range for nesting/early brood rearing habitat characteristics, consistent with the breeding habitat suitability matrix identified in Stiver et al. *In Press*. Sagebrush plants that are more tree or columnar-shaped provide less protective cover near the ground than sagebrush plants with a spreading shape (Stiver et al. *In Press*). Some sagebrush plants are naturally columnar (e.g., Great Basin big sagebrush), and a natural part of the plant community. However, a predominance of columnar shape arising from animal impacts may warrant management investigation or adjustments at site specific scales.
[6]All Desired Conditions will be dependent upon site capability and local variation (e.g., weather patterns, localized drought, ESD state, etc.).

Table 2-3
Seasonal Habitat Objectives for GRSG NE Wyoming

Attribute	Indicators	Desired Condition[6]	Reference
BREEDING HABITAT (Lek and Nesting/Early Brood-Rearing)			Doherty 2008. Holloran and Anderson 2005.
Lek Security	Proximity of trees	Trees absent or uncommon on shrub/grassland ecological sites within 1.86 miles (3 km) of occupied leks.	Baruch-Mordo, S., J. S. Evans, J. P. Severson, D. E. Naugle, J. D. Maestas, J. M. Kiesecker, M. J. Falkowski, C. A. Hagen, and K. P. Reese 2013. Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
	Proximity of sagebrush to leks	Adjacent protective sagebrush cover within 330 ft. (approx. 100 m) of an occupied lek.	Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
NESTING/EARLY BROOD-REARING			
Cover and Food	Seasonal habitat extent	>80% of the nesting habitat meets the recommended vegetation characteristics, where appropriate (relative to ecological site potential, etc.).	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Sagebrush cover[2]	5 to 25%	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000. Connelly, J. W., K. P. Reese, and M. A. Schroeder 2003. Hagen, C. A., J. W. Connelly, and M. A. Schroeder 2007.
	Sagebrush height Arid sites[3] Mesic sites[4]	 4-31 inches (10-80cm) 12-31 inches (30-80cm)	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Predominant sagebrush shape	Predominantly spreading shape[5]	Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
	Perennial grass cover (such as native bunchgrass)[2] Arid sites[3] Mesic sites[4]	 ≥10% ≥15% Cool-season bunchgrasses preferred	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000. Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press). Cagney J., E. Bainter, B. Budd, T. Christiansen, V. Herren, M. Holloran, B. Rashford, M. Smith and J. Williams 2010.
	Perennial grass height (including residual grasses)	Adequate nesting cover of >7" or as determined by ESD	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.

Table 2-3
Seasonal Habitat Objectives for GRSG NE Wyoming

Attribute	Indicators	Desired Condition[6]	Reference
		site potential and local variability	Connelly, J. W., K. P. Reese, and M. A. Schroeder 2003. Doherty, K.E., D.E. Naugle, J.D. Tack, B.L Walker, J.M. Graham and J.L. Beck 2014. Hagen, C. A., J. W. Connelly, and M. A. Schroeder 2007. Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
	Perennial forb cover[2]		Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Arid sites[3]	>5%	
	Mesic sites[4]	>10%	
LATE BROOD-REARING/SUMMER[1] (July-October)[1] (Apply to all habitat outside of nesting/breeding and winter)			
Cover and Food	Seasonal habitat extent	>40% of the summer/brood habitat meets recommended brood habitat characteristics where appropriate (relative to ecological site potential, etc.)	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Sagebrush cover[2]	5-25%	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Sagebrush height	4 to 32 inches (20.3-80cm)	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Perennial grass cover	>5% arid sites	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Riparian meadow habitat condition	Proper Functioning Condition	Preferred forbs are listed in Stiver et al. (in press).
	Upland and riparian perennial forb availability	Preferred forbs are common with several preferred species present	Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).
WINTER[1] (November –March)[1] (Apply to areas known or likely winter-use)			
Cover and Food	Seasonal habitat extent	>80% of the wintering habitat meets winter habitat characteristics where appropriate (relative to ecological site, etc.).	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.
	Sagebrush cover above snow[2]	>5%	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000. Stiver, S. J., E. T. Rinkes, D. E. Naugle, P. D. Makela, D. A. Nance, and J. W. Karl (in press).

Table 2-3
Seasonal Habitat Objectives for GRSG NE Wyoming

Attribute	Indicators	Desired Condition[6]	Reference
	Sagebrush height above snow	>10 inches (>25cm)	Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun 2000.

[1] Where credible data support different seasonal dates than those identified, dates may be shifted but the amount of days cannot be shortened or lengthened by the local unit.
[2]Absolute cover is the actual recorded cover and can exceed 100% when recorded across all species and all layers. It is not relative cover, which is the proportions of each species, and equals 100%. Note that cover is reported for only those species (e.g., sagebrush, preferred forbs) that are sampled to determine suitability of habitat for sage-grouse. Overall cover at the site will be greater than that sampled for sage-grouse habitat, due to other species present.
[3]Arid corresponds to the 10 – 12 inch precipitation zone; *Artemisia tridentata wyomingensis* is a common big sagebrush sub-species for this type site (Stiver et al. *In Press*).
[4]Mesic corresponds to the ≥12 inch precipitation zone; *Artemisia tridentata vaseyana* is a common big sagebrush sub-species for this type site (Stiver et al. *In Press*).
[5]Collectively the indicators for sagebrush (cover, height, and shape), perennial grass and perennial forb (cover, height and/or availability) represent the desired condition range for nesting/early brood rearing habitat characteristics, consistent with the breeding habitat suitability matrix identified in Stiver et al. *In Press*. Sagebrush plants that are more tree or columnar-shaped provide less protective cover near the ground than sagebrush plants with a spreading shape (Stiver et al. *In Press*). Some sagebrush plants are naturally columnar (e.g., Great Basin big sagebrush), and a natural part of the plant community. However, a predominance of columnar shape arising from animal impacts may warrant management investigation or adjustments at site specific scales.
[6]All Desired Conditions will be dependent upon site capability and local variation (e.g., weather patterns, localized drought, ESD state, etc.).

Management Decisions (MD)

Monitoring Effectiveness

MD SSS 1: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

The BLM, in coordination with the State of Wyoming and its agencies, other local partners and stakeholders, will establish monitoring framework (Appendix D) for sage-grouse populations and habitat that will be incorporated into individual project approvals, including small and in-house projects, as appropriate and necessary.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Bates Hole and Fish Creek/Willow Creek: The areas will have priority for vegetative treatments to improve sage-grouse habitats and for vegetation monitoring to ensure residual herbaceous vegetation is maintained for nesting cover on public lands.

Density and Disturbance

MD SSS 2: In PHMAs (core only), the density of disturbance of an energy or mining facility (Appendix D) will be limited to an average of one site per square mile (640 acres) within the DDCT, subject to valid existing rights. The one location and cumulative value of existing disturbances will not exceed 5 percent of suitable habitat of the DDCT area. Inside PHMAs, all suitable habitat disturbed (any program area) will not exceed 5% within the DDCT area using the DDCT process.

MD SSS 3: Inside PHMAs (connectivity only), all suitable habitat disturbed (any program area) will not exceed 5% of suitable habitat within the DDCT area using the DDCT process.

Onsite and Offsite Mitigation

MD SSS 4: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

In undertaking BLM management actions, and, consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and degradation in PHMAs, the BLM will require and ensure mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. This will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. In Wyoming, the USFWS has found that "the core area strategy, if implemented by all landowners via regulatory mechanism, would provide adequate protection for sage-grouse and their habitats in the state." The BLM will implement actions to achieve the goal of net conservation gain consistent with the Wyoming Strategy (EO2015-4) that includes "compensatory mitigation as a strategy that should be used when avoidance and minimization are inadequate to protect Core Population Area Greater sage-grouse."

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Pinedale RMP:

Offsite mitigation proposed by oil and gas or other operators shall be considered and analyzed in future environmental documents as possible mitigation for proposed activities within the planning area. Proposed offsite mitigation will be described and analyzed for effectiveness in detail on a project-specific basis. Planning for offsite mitigation will be performed in coordination with local government agencies. The need for offsite mitigation will be determined in conformance with current BLM policy, as updated.

The order of use of mitigation methods from most to least preferred is as follows:

1. Onsite mitigation directly resolving impacts created by the action
2. Offsite mitigation to the resources affected by the action that cannot be resolved onsite
3. Offsite mitigation to similar or related resources affected by the action that cannot be resolved onsite.

The following stipulations apply to offsite mitigation measures:

1. Offsite mitigation will be used as a last choice when developing mitigation measures.
2. Offsite mitigation proposals will describe the replacement or substitution activities or methods that are used to address potential impacts on specific resources or environments or both.
3. Offsite mitigation must be as close to "in-kind" in replacement or substitution of resources, habitat function, or environments as practicable (e.g., elk habitat for elk habitat, historical properties for historical properties).
4. Offsite mitigation practices must last as long as the impacts are expected to occur.
5. Offsite mitigation practices are to be developed, conducted or performed, and funded by the project proponent.
6. Offsite mitigation activities must be conducted subject to BLM review and approval that the mitigation will actually address the impacts occurring on the public lands.

The priority order for mitigating resource impacts onsite or offsite is as follows:

1. Onsite Mitigation – Onsite (avoid, minimize, rectify, or reduce in time).
2. Offsite Mitigation – Local (unless greater resource benefits can be achieved through regional or interstate mitigation).
3. Offsite Mitigation – Regional (unless greater resource benefits can be achieved through interstate mitigation).
4. Offsite Mitigation – Interstate: The preferred area for conducting offsite mitigation is as near (local offsite mitigation) to the project or impacted area as possible or as scientific information and impact analysis suggests.
5. Offsite Mitigation – Interstate: The preferred area for conducting offsite mitigation is as near (local offsite mitigation) to the project or impacted area as possible or as scientific information and impact analysis suggests.

Timing and Distance Restrictions

MD SSS 5: Sage-grouse leks inside PHMAs:

Surface occupancy and surface disturbing activities will be prohibited on or within a 0.6 mile radius of the perimeter of occupied sage-grouse leks (Map 2-8).

The AO may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of GRSG.

MD SSS 6: Sage-grouse leks outside PHMAs:

Surface occupancy and surface disturbing activities will be prohibited on or within a 0.25 mile radius of the perimeter of occupied sage-grouse leks (Map 2-8).

The AO may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of GRSG.

MD SSS 7: Sage-grouse breeding, nesting, and early brood-rearing habitat inside PHMAs (core only):

Surface disturbing and/or disruptive activities will be prohibited from March 15–June 30 to protect sage-grouse breeding, nesting, and early brood rearing habitat. This timing limitation will be applied throughout the PHMAs (core only). Activities in unsuitable habitats will be evaluated under the exception and modification criteria and shall be allowed on a case by case basis.

Where credible data support different timeframes for this seasonal restriction, dates may be expanded by up to 14 days prior to or subsequent to the above dates.

MD SSS 8: Sage-grouse breeding, nesting, and early brood-rearing habitat inside PHMAs (connectivity only):

Surface disturbing and/or disruptive activities will be prohibited within PHMAs (connectivity only) from March 15–June 30 to protect breeding, nesting, and early brood-rearing habitats within 4 miles of the lek or lek perimeter of any occupied sage-grouse lek within identified PHMAs (connectivity only). This timing limitation will be applied throughout the PHMAs (connectivity only). Activities in unsuitable habitats will be evaluated under the exception and modification criteria and may be allowed on a case-by-case basis.

Where credible data support different timeframes for this seasonal restriction, dates can be shifted by 14 days prior or subsequent to the above dates.

MD SSS 9: Sage-grouse breeding, nesting, and early brood-rearing habitat outside PHMAs:

Surface disturbing and/or disruptive activities will be prohibited from March 15–June 30 to protect sage-grouse nesting and early brood rearing habitats within 2 miles of the lek or lek perimeter of any occupied lek located outside PHMAs.

Where credible data support different timeframes for this restriction, dates can be shifted by 14 days prior or subsequent to the above dates.

MD SSS 10: Sage-grouse winter concentration areas:

Surface disturbing and/or disruptive activities in sage-grouse winter concentration areas would be prohibited from December 1–March 14.

Activities in unsuitable habitats within PHMAs would be evaluated under the exception and modification criteria and could be allowed on a case-by-case basis.

Protection of additional mapped winter concentration areas in GHMAs would be implemented where winter concentration areas are identified as supporting populations of sage-grouse that attend leks within PHMAs (core only). Appropriate seasonal timing restrictions and habitat protection measures would be considered and evaluated in consultation with the WGFD in all identified winter concentration areas.

Predation

MD SSS 11: The BLM will support other agencies in their efforts to minimize impacts from predators.

The BLM will implement strategies and techniques in land management decisions that address predators shown to pose a threat to sage-grouse (Appendix N).

The BLM will support and encourage other agencies in their efforts to minimize impacts from predators on sage-grouse where needs have been documented.

Noise

MD SSS 12: New project noise levels, either individual or cumulative, should not exceed 10 dBA (as measured by L50) above baseline noise at the perimeter of the lek from 6:00 pm to 8:00 am during the breading season (March 1–May 15). Specific noise protocols for measurement and implementation will be developed as additional research and information emerges.

Adaptive Management

MD SSS 13: The GRSG adaptive management plan (Appendix D) provides a means of addressing and responding to unintended negative impacts to GRSG and its habitat will be addressed before consequences become severe or irreversible. The Wyoming GRSG ARMPA will include the requirement for projects requiring an EIS to develop adaptive management strategies in support of the population management objectives for GRSG set by the State of Wyoming. Wyoming ADPPs will include an adaptive management plan, as reviewed by the BLM WO, SOL, and USFWS, which includes: Upon determination that a hard trigger is tripped, the BLM will immediately defer issuance of discretionary authorizations for new actions for a period of 90 days. In addition, within 14 days of a determination, the Adaptive Management Working Group will convene to develop an interim response strategy and initiate an assessment to determine the causal factors.

Adaptive management triggers are essential for identifying when potential management changes are needed in order to continue meeting GRSG conservation objectives. With respect to sage-grouse, all regulatory entities in Wyoming, including the BLM, use soft and hard triggers. Soft and hard triggers are focused on three metrics: 1) number of active leks, 2) acres of available habitat, and 3) population trends based on annual lek counts.

In making amendments to this plan, the BLM will coordinate with the USFWS as the BLM continues to meet its objective of conserving, enhancing and restoring GRSG habitat by reducing, minimizing or eliminating threats to that habitat. The hard and soft trigger data will be analyzed as soon as it becomes available after the signing of the ROD and then at a minimum, analyzed annually thereafter.

Soft Triggers:

Soft triggers are indicators that management or specific activities may not be achieving the intended results of conservation action or that unanticipated changes to populations or habitats have occurred that have the potential to place habitats or populations at risk. The soft trigger is any deviation from normal trends in habitat or population in any given year. Metrics include, but are not limited to, annual lek counts, wing counts, aerial surveys, habitat monitoring, and DDCT evaluations. BLM field offices, with the assistance of their respective land and resource management plan implementation groups, local WGFD offices, and local sage-grouse working groups will evaluate the metrics with the Adaptive Management Working Group (AMWG) on an annual basis. For population metrics, normal population trends are calculated as the five-year running mean of annual population counts. The purpose of these strategies is to address localized GRSG population and habitat changes by providing the framework in which management will change if monitoring identifies negative population and habitat anomalies in order to avoid crossing a hard trigger threshold.

Hard Triggers:

Hard triggers are indicators that management is not achieving desired conservation results. Hard triggers will be considered a catastrophic indicator that the species is not responding to conservation actions, or that a larger-scale impact or set of impacts is having a negative effect. Within the range of normal population variables (five-year running mean of annual population counts), hard triggers shall be determined to take effect

when two of the three metrics exceeds 60 percent of normal variability for the area under management in a single year, or when any of the three metrics exceeds 40% of normal variability for a three year time period within a five-year range of analysis. A minimum of three consecutive years in a five-year period is used to determine trends (i.e., Y1-2-3, Y2-3-4, Y3-4-5).

Sagebrush Focal Areas

MD SSS 14: Designate SFAs as shown on Map 1-2 (1,915,990 acres). SFAs will be managed as PHMAs, with the following additional management:

1) Recommended for withdrawal from the General Mining Act of 1872, subject to valid existing rights, the lands shown in Map 2-3 (252,160 acres), and 2) Prioritized for vegetation management and conservation actions in these areas, including, but not limited to land health assessments, wild horse and burro management actions, review of livestock grazing permits/leases, and habitat restoration (see specific management sections).

Vegetation (VEG)

Management Decisions (MD)

MD VEG 1: Manage vegetation composition, diversity and structure, as determined by Ecological Site Description (ESD), or other methods that reference site potential, and WGFD protocols, to achieve GRSG habitat management objectives, in cooperation with stakeholders.

MD VEG 2: Within PHMAs in northeast Wyoming (as mapped in WY EO 2011-5), vegetation treatments in nesting and wintering habitat that will reduce sagebrush canopy to less than 15% will not be conducted.

MD VEG 3: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

For vegetation treatments in sagebrush within PHMAs, refer to Appendix H, WGFD Protocols for Treating Sagebrush to Benefit Sage-Grouse (WGFD 2011, as updated) and BLM Washington Office Instruction Memorandum 2013-128 (Sage-grouse Conservation Related to Wildland Fire and Fuels Management).

These recommended protocols will be used in determining whether proposed treatment constitutes a "disturbance" that will contribute toward the 5% threshold within PHMA maintenance. Additionally, these protocols will be used to determine whether the proposed treatment configuration is expected to have neutral or beneficial impacts for PHMA (core only) populations or if they represent additional habitat loss or fragmentation.

Treatments to enhance sagebrush/grasslands habitat for sage-grouse will be evaluated based upon habitat quality and the functionality/use of treated habitats post-treatment.

The BLM will work collaboratively with partners at the state and local level to maintain and enhance sage-grouse habitats.

Seasonal restriction would be applied, as needed, for implementing fuels management treatments according to the type of seasonal habitat present.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Green River RMP:

Prescribed burns generally will be conducted in areas having greater than 35% sagebrush composition, 20% desirable grass composition, and greater than 10 inches of precipitation. Other vegetation manipulation methods will be considered on a case-by-case basis depending on objectives and cost benefits.

Casper RMP:

Decision 4053: The areas (Bates Hole and Fish Creek/Willow Creek) will have priority for vegetative treatments to improve sage-grouse habitats and for vegetation monitoring to ensure residual herbaceous vegetation is maintained for nesting cover on public lands.

MD VEG 4: Within PHMAs, grazing will be deferred on treated areas for two full growing seasons unless vegetation objectives or vegetation recovery indicates a shorter or longer rest period is necessary based on vegetation monitoring results.

Vegetation Reclamation

MD VEG 5: Reclamation of surface disturbances in PHMAs will be consistent with the Wyoming Reclamation Policy (BLM 2009a), vegetation objectives (Table 2-2 and 2-3) and Appendix M.

A monitoring plan will be developed for each restoration or reclamation project and will report progress and changes in resource condition.

MD VEG 6: Areas for vegetation restoration and/or restoration criteria that include state sage-grouse conservation plans and appropriate local information will be identified. The use of native plants and seeds for restoration will be required unless the probability for success is low (non-native plants and seeds may be used as long as they meet sage-grouse habitat objectives), and restoration management will be designed to obtain long-term persistence based on ESD.

Reestablishment of sagebrush cover and desirable understory plants will be the highest priority for restoration efforts.

Landscape patterns that most benefit sage-grouse will be restored and created, considering potential changes in climate.

MD VEG 7: Within PHMAs, implementation of restoration projects will be prioritized based on environmental variables that improve chances for project success in areas most likely to benefit sage-grouse.

Restoration will be prioritized in seasonal habitats that are thought to be limiting sage-grouse distribution and/or abundance.

MD VEG 8: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Where probability of success or native seed availability is low or where there is a specific identified purpose that cannot be met with natives, non-native seeds can be used provided they meet sage-grouse habitat conservation and vegetation (see Tables 2-2 and 2-3) objectives.

The use of native seeds for fuels management treatment will be prioritized based on availability, adaptation (site potential), and probability of success. Where probability of success or native seed availability is low, non-native seeds may be used to meet GRSG habitat objectives to trend toward restoring the fire regime. When reseeding, use fire resistant native and non-native species, as appropriate, to provide for fuel breaks.

Native seed allocation will be prioritized for use in sage-grouse habitat.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Kemmerer RMP:

Require the use of certified weed-free seed and mulch for rehabilitation projects.

Pinedale RMP:

Disturbed areas will be reclaimed to native site plant composition. If reclamation of original plant composition is impossible or not desirable, reclamation will achieve a native plant community that meets the Wyoming Standards for Rangeland Health.

MD VEG 9: Post emergency stabilization and rehabilitation (ES&R) and burn area emergency rehabilitation BAER management will be designed to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse, and travel management, etc., to achieve and maintain the desired condition of ES&R and BAER projects to benefit sage-grouse (Eiswerth and Shonkwiler 2006).

MD VEG 10: Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to sage-grouse habitat to determine if they should be restored to sagebrush or habitat of higher quality for sage-grouse. If these seedings provide value in conserving or enhancing sage-grouse habitats, then no restoration would be necessary. Assess the compatibility of these seedings for sage-grouse habitat during the land health assessments.

MD VEG 11: Priority will be given for implementing specific sage-grouse habitat restoration projects in areas invaded by annual grasses first to sites that are adjacent to or surrounded by PHMAs. Areas invaded by annual grasses will be second priority for restoration when the sites are not adjacent to PHMAs, but are within 2 miles of PHMAs. The third priority for areas invaded by annual grasses habitat restoration projects will be sites beyond 2 miles of PHMAs. The intent will be to focus restoration outward from existing, intact habitat.

MD VEG 12: In fire prone areas where sagebrush seed is required for sage-grouse habitat restoration, the BLM will consider establishing seed harvest areas that are managed for seed production and are a priority for protection from outside disturbances.

MD VEG 13: Vegetation treatment proposals must include evaluation of soils, precipitation, invasive/exotic plants, as well as the current condition of PHMAs.

Avoid aerial pesticide/herbicide spraying in favor of ground applications to minimize drift into non-target areas in GRSG habitat unless benefits of treatments are likely to outweigh impacts.

MD VEG 14: Treat areas that contain cheatgrass and other invasive or noxious species to minimize competition and favor establishment of desired species.

Grasshopper/Mormon Cricket Control and Management

MD VEG 15: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

The BLM can implement treatments within PHMAs where outbreaks of grasshopper or Mormon cricket populations are expected to rise above economic levels. Treatments must be conducted only following reduced agent-area treatments (RAATS) protocols. The BLM will work collaboratively with partners at the federal, state, and local levels, including the Wyoming Weed and Pest Districts within the counties where the treatment is to occur, to maintain and enhance sage-grouse habitats in a manner consistent with the core population area strategy for conservation.

The BLM will be directed to utilize the Wyoming Grasshopper and Mormon Cricket Control website as a resource for updated information when conducting analysis of grasshopper and Mormon cricket control in sage-grouse habitats.

Avoid aerial pesticide/herbicide spraying in favor of ground applications to minimize drift into non-target areas in GRSG habitat unless benefits of treatments are likely to outweigh impacts.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Work with Animal and Plant Health Inspection Service (APHIS) to control outbreaks of grasshoppers and Mormon crickets on public lands in the planning area in accordance with the MOU between U.S. Department of the Interior and APHIS.

Fire and Fuels Management (FIRE)

Management Decisions (MD)

Suppression

MD FIRE 1: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

For Wildland Fire Management, the protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be done based on the values to be protected, human health and safety, and the costs of protection. The goal is to restore, enhance, and maintain areas suitable for GRSG. GRSG habitat (GHMA) will be prioritized commensurate with local fire plans, property values and other important habitat to be protected, with the goal to restore, enhance, and maintain areas suitable for GRSG.

PHMAs (and Priority Areas for Conservation (PAC), if so determined by individual RMP efforts) will be the highest priority for conservation and protection during fire operations and fuels management decisionmaking. The PHMAs will be viewed as more valuable than GHMAs when priorities are established. When suppression resources are widely available, maximum efforts will be placed on limiting fire growth in GHMA polygons as well. These priority areas will be further refined following completion of the Greater Sage-Grouse Landscape Wildfire and Invasive Species Habitat Assessments described in Appendix L.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Appropriate management response will be used on all wildfires in the planning area.

Full protection strategies and tactics will be used in the following areas:

1. Wildland Urban Interface (WUI)
2. Wildland industrial interface
3. Developed recreation sites
4. Developed electronics sites of all types.

In all other areas AMR strategies and tactics will be determined by (but not limited to) the following:

1. Firefighter and public safety
2. Resource values at risk
3. Proximity to private land
4. Firefighting resource availability.

Tactical constraints follow:

1. The use of retardant within 300 feet of surface water (standing or running) is prohibited.
2. No trees are to be cut during suppression activities within 200 yards of an identified bald eagle roost.

No heavy equipment will be used within the following areas, except when human safety is at risk:

1. Areas of cultural resource sensitivity
2. Riparian/wetland habitats
3. Big game crucial winter range habitats
4. GRSG leks
5. Areas of highly erosive soils.

In areas not identified as full protection, heavy equipment usage will be limited to existing roads and trails or immediately adjacent to them.

Kemmerer RMP:

In areas of high-density urban and (or) industrial interface with intermingled BLM-administered lands, suppression objectives will follow the AMR in an approved fire management plan for the planning area to provide first for human health and safety, while minimizing loss of property and threats to other surface owners. Generally, wildland fires are suppressed in these areas. In areas of low-density urban and (or) industrial interface where BLM-administered lands occur in large contiguous blocks, fire suppression objectives will follow the AMR in an approved fire management plan for the planning area to provide first for human health and safety, while allowing for achievement of resource objectives.

Newcastle RMP:

Full suppression will be used on fires endangering human life or that spread to within 0.25 mile of state or private lands, structures and facilities, oil and gas fields, important riparian habitat, or other sensitive resources.

All wildfires will be evaluated to determine the need for rehabilitation or restoration measures. Restoration of burned areas will be by natural succession unless a special need is identified to prevent further resource damage.

Pinedale RMP:

Wildland fire mitigation and fuels activities will be managed to provide for firefighter and public safety as a first priority. Public lands within intermixed landownership areas will be managed in association with the adjoining and nearby private and state lands.

Areas of mixed landownership, communities at risk as identified in the Federal Register, Volume 66, Number 160, 2001 (Antelope Run, Beaver Creek area, Boulder, Cottonwood Creek, Daniel, Forty Rod, Hoback Ranches, New Fork, Pinedale, Pocket Creek, and Upper Green); urban and industrial interface areas; and areas containing high-priority resource values have high priority for response to wildland fires and/or for fuels reduction and mitigation. Wildland fire suppression activities will be based on the AMR.

Rawlins RMP:

A high priority for fire management activities will be given to areas identified as communities at risk, industrial interface areas, and areas containing resource values considered high priority within the RMP planning area.

Green River RMP:

Wildfire suppression will emphasize AMR. Immediate control actions will be used only in cases of arson, direct threat to public safety, or a strong potential threaten structural property.

Fire suppression actions will be based on achieving the most efficient control and allowing historical acres burned to increase. Activity plans will be developed for designated fire management areas defining specific parameters for all fire occurrences.

JMH CAP:

Appropriate management response to protect the basin big sagebrush/lemon scurfpea plant communities will be applied.

Wildland and prescribed fires will be managed in all vegetation types to maintain or improve biological diversity and the overall health of the public lands. In particular, plant species and age class diversity will be a priority; thus, AMR for all wildland fires will be identified and implemented depending on the resources and management objectives for the area.

Suppression techniques and hazardous fuels reduction activities will be identified to reduce wildland fire severity and occurrence on portions of the landscape where fire causes undesirable changes in plant community composition and structure. A site-specific analysis will be prepared for sensitive resource areas, such as special status plant species sites, heritage sites, historic trails, and ACECs, to determine the type of fire suppression activity that will be acceptable. Fire equipment and fire suppression techniques, such as vegetation clearing, will be limited to existing roads and trails in special status plant species habitat. As appropriate, the Fire Management Plan will be updated to reflect the appropriate suppression activity in sensitive resource areas.

Fuels Management

MD FIRE 2: In PHMAs, fuels treatments will be designed and implemented with an emphasis on protecting existing sagebrush ecosystems and enhancing and protecting future sagebrush ecosystems (refer to WGFD Protocols for Treating Sagebrush to Benefit Sage-grouse [WGFD 2011, as updated]) and Appendix H.

These recommended protocols will be used in determining whether proposed treatment constitutes a "disturbance" that will contribute toward the 5% threshold for habitat maintenance.

Fuel treatments will be designed through an interdisciplinary process to expand, enhance, maintain, and protect GRSG habitat. Green strips (using native fire resistant/resilient species) and/or fuel breaks will be used, where appropriate, to protect seeding efforts from subsequent fire events.

In coordination with the USFWS and relevant state agencies, BLM planning units (Districts) with large blocks of GRSG habitat will develop, using the assessment process described in Appendix L, a fuels management strategy which considers an up-to-date fuels profile, land use plan direction, current and potential habitat

fragmentation, sagebrush and sage-grouse ecological factors, and active vegetation management steps to provide critical breaks in fuel continuity, where appropriate. When developing this strategy, planning units will consider the risk of increased habitat fragmentation from a proposed action versus the risk of large scale fragmentation posed by wildfires if the action is not taken.

Utilizing an interdisciplinary approach, a full range of fuel reduction techniques will be available. Fuel reduction techniques such as grazing, prescribed fire, chemical, biological, and mechanical treatments will be acceptable.

Upon project completion, fuels projects will be monitored and managed to ensure long-term success, including persistence of seeded species and/or other treatment components. Invasive vegetation post-treatment will be controlled.

Wildfire prevention plans will be developed that explain the resource value of sage-grouse habitat and include fire prevention messages and actions to reduce human-caused ignitions.

MD FIRE 3: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

For fuels management, the BLM will consider multiple tools for fuels reduction and will analyze in NEPA compliance documentation before electing to implement prescribed fire in PHMAs.

If prescribed fire is used in GRSG habitat, the NEPA analysis for the Burn Plan will address:

- Why alternative techniques were not selected as a viable options
- How GRSG goals and objectives will be met by its use
- How the COT Report objectives will be addressed and met
- A risk assessment to address how potential threats to GRSG habitat will be minimized.

Prescribed fire as a vegetation or fuels treatment shall only be considered after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Prescribed fire can be used to meet specific fuels objectives that protect GRSG habitat in PHMAs (e.g., creation of fuel breaks that disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer reduction treatments, used as a component with other treatment methods to combat annual grasses and restore native plant communities).

Prescribed fire in known winter range shall only be considered after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Any prescribed fire in winter habitat will need to be designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect winter range habitat quality. Refer to Appendix H, WGFD Protocols for Treating Sagebrush to Benefit Sage-grouse (WGFD 2011, as updated) and BLM Washington Office Instruction Memorandum 2013-128. If prescribed fire activities are not in compliance with these protocols, the treatment will be considered a PHMA disturbance.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Use prescribed burning to achieve measurable 5th-order watershed objectives from (1) other resources, including, but not limited to, forestry, wildlife, range, vegetation, and watershed; (2) the reduction of hazardous fuels; and (3) the introduction of fire into fire-adapted ecosystems.

Green River RMP/JMH CAP:

Prescribed fire will generally be the preferred method of vegetation manipulation to convert decadent stands of brushland to grasslands and to stimulate sprouting of old, decadent aspen stands and/or shrub species. Prescribed burns are preferred in areas having greater than 35% sagebrush composition, 20% desirable grass composition, and greater than 10 inches of precipitation.

Rawlins RMP:

Fuel treatments, including prescribed fire, mechanical, chemical, and biological treatments will be used for fuels reduction and to meet other multiple-use resource objectives, including returning fire to its natural role in the ecosystem. Wildland urban interfaces (WUI) and communities at risk will receive priority for fuels reduction.

MD FIRE 4: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Remove conifers encroaching into sagebrush habitats in a manner that considers tribal cultural values. Prioritize treatments closest to occupied sage-grouse habitats and near occupied leks, and where juniper encroachment is phase 1 or phase 2. Use of site-specific analysis and principles like those included in the FIAT report (Chambers et. al., 2014) and other ongoing modeling efforts to address conifer encroachment will help refine the location for specific priority areas to be treated.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Treat woodland encroachment in grassland, sagebrush, aspen, and other vegetative communities where it is determined to be detrimental to other resource values or uses.

Manage 630,180 acres of sagebrush communities toward DPC.

MD FIRE 5: The following RMP decisions remain in effect for both PHMAs and GHMAs:

Pinedale RMP:

In the WUI or industrial interface, fuels reduction methods best suited to the area will be used to reduce the risk of catastrophic fire to these areas.

Casper RMP:

Use prescribed burning to achieve measurable 5th-order watershed objectives from (1) other resources, including, but not limited to, forestry, wildlife, range, vegetation, and watershed; (2) the reduction of hazardous fuels; and (3) the introduction of fire into fire-adapted ecosystems.

Utilize an integrated management technique approach (defined as prescribed fire, mechanical, chemical, or biological, followed by desired reseeding) to reduce fuels to protect high priority areas or resource values defined as, but not limited to the following:

- Urban and industrial interface areas
- Developed recreation areas
- Commercial timber areas
- Wildlife habitats
- Range-improvement facilities
- Communication sites
- Municipal watersheds. Decision 3008 Fuels Management.

Rawlins RMP:

A high priority for fire management activities will be given to areas identified as communities at risk, industrial interface areas, and areas containing resource values considered high priority within the RMP planning area.

JMH CAP:

Appropriate management response to protect the basin big sagebrush/lemon scurfpea plant communities will be applied.

Wildland and prescribed fires will be managed in all vegetation types to maintain or improve biological diversity and the overall health of the public lands. In particular, plant species and age class diversity will be a priority; thus, appropriate management response (AMR) for all wildland fires will be identified and implemented depending on the resources and management objectives for the area.

Suppression techniques and hazardous fuels reduction activities will be identified to reduce wildland fire severity and occurrence on portions of the landscape where fire can cause undesirable changes in plant community composition and structure. A site-specific analysis will be prepared for sensitive resource areas, such as special status plant species sites, heritage sites, historic trails, and ACECs, to determine the type of fire suppression activity that will be acceptable. Fire equipment and fire suppression techniques, such as vegetation clearing, will be limited to existing roads and trails in special status plant species habitat. As appropriate, the Fire Management Plan will be updated to reflect the appropriate suppression activity in sensitive resource areas.

Post-Fire Management

MD FIRE 6: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Burned areas within PHMAs will be restored to suitable habitat with consideration given to ESDs, reference sites, site potential, habitat objectives and local variability.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Kemmerer RMP:

Implement BLM Emergency Stabilization and Rehabilitation standards located in the Department of the Interior (DOI) Interagency Burned Area Emergency Response Guidebook and BLM Burned Area Emergency Stabilization and Rehabilitation Handbook on wildland fires to protect and sustain healthy ecosystems and protect life and property.

Newcastle RMP:

All wildfires will be evaluated to determine the need for rehabilitation or restoration measures. Restoration of burned areas will be by natural succession unless a special need is identified to prevent further resource damage.

Rawlins RMP:

Rehabilitation and restoration efforts specific to a fire event will be undertaken to protect and sustain ecosystems, public health and safety, and to help communities protect infrastructure.

MD FIRE 7: Within PHMAs, post fuels management projects will be designed to ensure long-term persistence of seeded or pre-treatment native plants (while controlling for erosion and treating infestation of invasive plant species), to return to suitable sage-grouse habitat.

Livestock Grazing (LG)

Management Decisions (MD)

MD LG 1: The BLM policy in WO-IM-2009-007 and BLM Handbook H-4180-1 will be used to evaluate land health standards achievement in PHMAs (core only) and, where not achieved, to determine if existing grazing management practices or levels of grazing use on public lands are significant factors in failing to achieve the standards and conform with the guidelines, which through this process will identify appropriate actions to address non-achievement and non-conformance.

When determining appropriate actions to address non-achievement of land health standards and non-conformance with the guidelines due to existing grazing management practices or levels of grazing use, management actions including but not limited to the following will be considered singly or in combination:

1. Season or timing of use
2. Numbers of livestock (includes temporary non-use or livestock removal)
3. Distribution of livestock use
4. Intensity of use
5. Kind of livestock (e.g., cattle, sheep, horses, llamas, alpacas and goats)
6. Class of livestock (e.g., yearlings versus cow calf pairs)
7. Range improvements.

Refer to the document, "Grazing Influence, Management, and Objective Development in Wyoming's Greater Sage-Grouse Habitat" (Cagney et al. 2010) for guidance when considering appropriate management actions to achieve conformance.

MD LG 2: Within PHMAs the BLM will work cooperatively with permittees, lessees, and other landowners to develop voluntary grazing management strategies that integrate both public and private lands into single management units to improve sage-grouse habitat.

Livestock Grazing Permit Monitoring

MD LG 3: The following RMP decisions remain in effect:

Casper RMP:

Grazing leases will be adjusted where an evaluation of monitoring, field observations, or other data indicate changes, and either increases or decreases, in forage allocation are needed or when necessary or required by other applicable law or regulation.

Kemmerer RMP:

Vegetative communities will be managed in accordance with Wyoming Standards for Healthy Rangelands.

Appropriate livestock grazing management actions will be developed and integrated to address rangeland health standards, improve forage for livestock, and enhance rangeland health.

Newcastle RMP:

Any adjustments in livestock grazing use will be made as a result of monitoring and consultation with grazing permittees. Monitoring studies will be conducted using the current BLM-approved methodology**.**

Pinedale RMP:

Monitoring of the range and the vegetation resource will be conducted at a level sufficient to detect changes in grazing use, trend, and range conditions. Monitoring will be tied to land health standards and indicators that help determine change in status and progress toward meeting objectives. Data will be used to direct and support grazing management decisions consistent with national policy.

Rawlins RMP:

Livestock grazing will be managed to meet the Wyoming Standards for Healthy Rangelands.

Green River RMP/JMH CAP:

The kinds and seasons of livestock grazing use will continue to be licensed until monitoring, negotiation, consultation, or a change in resources conditions indicate that a modification is needed. Monitoring will be continued or initiated following adjustments in grazing use to assure that grazing and other management objectives are being met.

Permit Renewals

MD LG 4: Within PHMAs, all BLM use authorizations will contain terms and conditions regarding the actions needed to meet or progress toward meeting the habitat objectives. If monitoring data show the habitat objectives have not been met nor progress being made towards meeting them, there will be an evaluation and a determination made as to the cause. If it is determined that the authorized use is a significant factor in failing to achieve the standards for healthy rangelands, the use will be adjusted by the response specified in the instrument that authorized the use.

The NEPA analysis for renewals and modifications of livestock grazing permits/leases that includes lands within SFAs and PHMAs will include specific management thresholds based on GRSG habitat objectives (Tables 2-2 and 2-3) and Land Health Standards (43 CFR 4180.2), and one or more defined responses that will allow the authorizing officer to make adjustments to livestock grazing that have already been subjected to NEPA analysis.

MD LG 5: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

BLM monitoring will be used to evaluate progress toward achieving land health standards within PHMAs and, where not achieved, to determine if existing grazing management practices or levels of grazing use on public lands are significant factors in failing to meet, maintain or make progress towards achieving the standards and conform with the guidelines, which through this process will identify appropriate actions to address non-achievement and non-conformance.

Allotments within SFAs, followed by those within PHMAs, and focusing on those containing riparian areas, including wet meadows, will be prioritized for field checks to help ensure compliance with the terms and

conditions of the grazing permits. Field checks include monitoring for actual use, utilization, and use supervision.

The BLM will prioritize (1) the review of grazing permits/leases, in particular to determine if modification is necessary prior to renewal, and (2) the processing of grazing permits/leases in SFAs followed by PHMAs outside of the SFAs. In setting workload priorities, precedence will be given to existing permits/leases in these areas not meeting Land Health Standards, with focus on those containing riparian areas, including wet meadows. The BLM may use other criteria for prioritization to respond to urgent natural resource concerns (e.g., fire) and legal obligations.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Conversions in kinds of livestock and changes in season of use will be considered on a case-by-case basis through an environmental analysis. Such changes will be consistent with rangeland health objectives. Grazing leases will be adjusted to accurately reflect the kind of livestock use on public land in all allotments.

Kemmerer RMP:

Current amounts, kinds, and seasons of livestock grazing uses will be authorized until rangeland health standards assessment results and (or) monitoring indicates a grazing use adjustment is necessary, or that a kind and (or) class of livestock or season of use modification can be accommodated.

Newcastle RMP:

Any adjustments in livestock grazing use will be made as a result of monitoring and consultation with grazing permittees. Monitoring studies will be conducted using the current BLM-approved methodology.

Pinedale RMP:

Conversions from one type of livestock to another will be evaluated on a case-by-case basis, including an environmental analysis, and will be authorized in conformance with the goals and objectives of the RMP.

Rawlins RMP:

The current amounts, kinds, and seasons of livestock grazing use will be authorized until monitoring, field observations, ecological site inventory, or other data acceptable to BLM indicates a grazing use adjustment is needed, as appropriate. Requests for changes in season-of use or kind-of-livestock will be considered on a case-by-case basis. Any decision regarding changes in grazing use will include cooperation, consultation, and coordination with the grazing permittees and the interested public.

Green River RMP:

The Wyoming Standards for Healthy Rangelands (BLM 1997a) will apply to all resource uses on BLM-administered lands. These standards are the minimal acceptable conditions that address the health, productivity, and sustainability of the rangeland. The standards describe healthy rangelands rather than rangeland by-products.

Achievement of a standard is determined through observing, measuring, and monitoring appropriate indicators. An indicator is a component of a system whose characteristics (e.g., presence, absence, quantity, and distribution) can be observed, measured, or monitored based on sound scientific principles. The standards will direct the management of public lands and focus the implementation of this activity plan toward the maintenance or attainment of healthy rangelands.

MD LG 6: At the time a permittee or lessee voluntarily relinquishes a permit or lease, the BLM will consider whether the public lands where that permitted use was authorized should remain available for livestock grazing or be used for other resource management objectives, such as reserve common allotments or fire breaks. This does not apply to or impact grazing preference transfers, which are addressed in 43 CFR 4110.2-3.

MD LG 7: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

When periods of drought occur, where appropriate, the AO will evaluate strategies to address drought through coordination with grazing permittee/lessee and annual billings processes.

In cooperation with livestock grazing permittees/lessees, drought contingency plans will be developed at the appropriate landscape unit that provide for a consistent/appropriate BLM response. Contingency plans shall establish strategies for addressing ongoing drought and post-drought recovery.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Other management considerations for use of stock driveway withdrawals (SDW) will include providing emergency use for relief from fire, drought, or other natural causes or to meet management objectives in adjoining allotments that require rest. These other uses will be addressed on a case-by-case basis and may occur any time during the year provided the AO has determined adequate forage is available and it does not interfere with regular trail use. The decision determining there is adequate forage will be documented and filed in the appropriate SDW file. Consultation and coordination with livestock owners who regularly use the respective SDW will be made prior to authorizing this type of use. This use will be authorized in accordance with federal grazing regulations (also see MD LG 9).

A drought contingency plan will be developed to maintain adequate habitat components for viable fish, wildlife, and Special Status Species populations.

Range Improvement Projects

MD LG 8: Specific to management for all GRSG Habitat, all RMPs are amended as follows:

In GHMAs and PHMAs, existing range improvements (e.g., fences, livestock/wildlife watering facilities) will continue to be evaluated and modified when necessary.

The potential risk to GRSG and its habitats from existing structural range improvements will be evaluated. The potential for modification of those structural range improvements identified as posing a risk will be addressed.

Supplements and supplemental feeding will continue to be authorized where appropriate.

Outside of PHMAs and GHMAs, and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Identified hazard fences will be modified and new fences will be constructed in accordance with the BLM Fencing Handbook 1741-1. Decision 4010.

Placement of salt, mineral, or forage supplements for livestock will not be allowed within 0.25 mile of water, wetlands, and riparian areas, unless written analysis shows that watershed, riparian, wetland, wildlife, and vegetative values will not be adversely impacted. Forage supplements will be required to be "certified weed-free."

Kemmerer RMP:

BLM fencing standards will be applied to newly constructed fences on BLM-administered lands within the planning area.

Existing fences will be eliminated or modified to reduce conflicts on a case-by-case basis.

Livestock salt or mineral supplements will be located a minimum of 0.25 mile away from water sources, riparian areas, and aspen stands. Buffers will be based on resource concerns on a case-by-case basis.

Newcastle RMP:

Fence construction will be required to meet current BLM fence standards.

Fences on BLM-administered public land surface that cause documented wildlife conflicts will be removed, reconstructed, or modified, as appropriate or necessary, to eliminate or reduce the conflict.

Construction of fences that interfere with movements of big game species in crucial big game winter range will not be allowed on BLM-administered public land surface.

Pinedale RMP:

Mineral supplement blocks will be placed in locations that promote proper grazing distribution and prevent inappropriate livestock use on riparian habitat; for example, by locating supplements on ridgetops and/or approximately 0.25 mile from riparian habitat. Placement of supplements near water sources, such as wells and reservoirs, will consider rangeland objectives, such as grazing distribution, wildlife habitat requirements, and reclamation success. Mineral supplement blocks will not be placed within 0.25 mile of an occupied sage-grouse lek. Mineral supplement blocks will not be placed within 0.25 mile of known Special Status Plant Species locations.

Rawlins RMP:

New fence construction will be authorized according to BLM standards unless modified following consultation with affected parties. Existing fences will be modified according to current BLM standards and according to wildlife and livestock management needs.

Green River RMP/JMH CAP:

Where documented wildlife conflicts with fencing on public lands occur, fences will be modified, reconstructed, or, if necessary, removed. Herding control of livestock will be encouraged as an alternative to fencing. Fence construction will be in accordance with BLM design standards and located so as not to overly impede wildlife movement. Consideration will also be given to Special Status Species and wild horse movement.

Green River RMP:

Livestock water developments and range improvements will be considered to maintain or improve resource conditions, enhance livestock distribution, or both. Compatibility with special status plant species will be required. Water developments and/or range improvements proposed in sensitive areas will be considered only if wildlife habitat and resource conditions are maintained or improved and no significant or irreversible adverse effects will occur.

Salt or nutritional supplements will be prohibited within 500 feet of riparian habitat and National Historic and Scenic Trails unless analysis shows that these resources will not be adversely affected. These supplements also will be prohibited on areas inhabited by special status plant species. Placement of supplements at least 500 feet away from wells, troughs, and other human-made water sources will be encouraged to better distribute livestock.

JMH CAP:

Livestock water developments and range improvements will be considered to maintain or improve resource conditions, enhance livestock distribution, or both. Compatibility with special status plant species will be required. Water developments and/or range improvements proposed in sensitive areas will be considered only if wildlife habitat and resource conditions were maintained or improved and no significant or irreversible adverse effects will occur.

Salt or nutritional supplements will be prohibited within 500 feet of riparian habitat and National Historic and Scenic Trails unless analysis shows that these resources will not be adversely affected. These supplements also will be prohibited on areas inhabited by special status plant species. Placement of supplements at least 500 feet away from wells, troughs, and other human-made water sources will be encouraged to better distribute livestock.

Livestock Trailing

MD LG 9: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Livestock trailing that is authorized will include a trailing plan to utilize non-habitat to the extent possible, include specific routes and timeframes for trailing, utilize existing trails, and avoid stopovers on occupied leks, as appropriate.

The following RMP decisions remain in effect with the modification described above:

Casper RMP:

The revocation of withdrawals for those trails that are no longer active will be reviewed and recommended and these lands will be incorporated into adjacent allotments (46,050 acres). Grazing leases will be offered to the respective grazing lessees. All remaining SDW lands for trail use (55,680 acres) will be retained.

Kemmerer RMP:

Current livestock trails will be retained. Livestock trailing use will occur within 0.5 mile of the mapped centerline.

Pinedale RMP:

Adequate stock trails will be maintained to support livestock trailing needs.

Riparian Area Management

MD LG 10: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Grazing between riparian habitats and upland habitats will be balanced to promote the production and availability of beneficial forbs to GRSG for use during nesting and brood-rearing. Grazing in meadows, mesic habitats, and riparian pastures also will be balanced to promote the production and availability of beneficial grasses and forbs for use during late brood-rearing within PHMAs, while maintaining upland conditions and functions.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

Lotic and lentic wetland/riparian areas will be managed toward Proper Functioning Condition (PFC).

The BLM will manage toward PFC and identified Desired Plant Community (DPC) on 350 miles of lotic and adjacent riparian habitat and 10,000 acres of lentic habitat to meet fish, wildlife, and Special Status Species habitat requirements.

Kemmerer RMP:

Livestock conversions will be allowed in allotments with riparian concerns only when a plan is approved to address riparian issues. Management actions and range improvements proposed to address riparian issues will have to be implemented prior to authorizing the conversion. Livestock conversions may be approved only after completion of a suitability study for the conversion. The conversion may be authorized if it is determined that riparian habitats will be maintained or improved by the conversion.

Pinedale RMP:

Meet the Wyoming Standards for Rangeland Health and maintain or enhance wetland and riparian vegetation to achieve Proper Functioning Condition.

Grazing systems will be designed to maintain or improve watershed and range condition; for example, through changing seasons of use, implementing rotational or other grazing management systems, or developing infrastructure for livestock management.

In allotments with riparian habitat, grazing management actions will be designed to maintain or achieve proper functioning condition.

Green River RMP:

Range improvements will be directed at resolving or reducing resource concerns, improvement of wetland/riparian areas, and overall improvement of vegetation/ground cover. New range improvements may be implemented in "I" and "M" category allotments. Maintenance of range improvements will be required in accordance with the BLM Rangeland Improvement Policy.

JMH CAP:

Implementation of grazing management systems will assist in improving or maintaining the desired range condition. Approved AMPs, or other activity plans intended to serve as the functional equivalent to an AMP, for each of the designated grazing allotments will provide the necessary guidance for achieving grazing management objectives.

Appropriate actions for improving degraded rangeland and riparian habitat (i.e., meeting Wyoming Standards for Healthy Rangelands (BLM 1997a)) include, but will not be limited to, reduction of permitted animal unit months (AUM), modified turnout dates, livestock water developments, range improvements, modified grazing periods, growing season rest, riparian pastures, exclosures, implementation of forage utilization levels, and livestock conversions. These improvements will be considered individually using the method outlined in Appendix 2 of the JMH CAP ROD to ensure conformance with management objectives for the planning area and other resource values.

MD LG 11: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Range improvement projects will be planned and authorized in a way that contributes to rangeland health and maintains and/or improves GRSG and its habitat.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Green River RMP:

Water sources may be developed in crucial wildlife winter ranges only when consistent with wildlife habitat needs. Such sources will be designed to benefit livestock, wild horses, and wildlife. Alternative water supplies or facilities for livestock may be provided to relieve livestock grazing pressure along stream bottoms and improve livestock distribution.

JMH CAP:

Livestock water developments and range improvements will be considered to maintain or improve resource conditions, enhance livestock distribution, or both. Compatibility with special status plant species will be required. Water developments and/or range improvements proposed in sensitive areas will be considered only if wildlife habitat and resource conditions are maintained or improved and no significant or irreversible adverse effects will occur.

MD LG 12: Existing water developments associated with springs and seeps will be evaluated and associated pipelines/structures to those developments having a negative effect on PHMAs will be modified.

Wild Horses and Burros (WHB)

Management Decisions (MD)

MD WHB 1: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Manage herd management areas (HMAs) in GRSG habitat within established appropriate management level (AML) range to achieve and maintain GRSG habitat (see Tables 2-2 and 2-3).

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Green River RMP/JMH CAP:

Specific habitat objectives for herd management areas will be developed. Consideration will be given to desired plant communities, wildlife, watershed, livestock grazing, and other resource needs.

MD WHB 2: PHMA (core only) management objectives will be considered when evaluating AMLs.

MD WHB 3: PHMA (core only) management objectives will be considered when conducting land health assessments in BLM HMAs.

MD WHB 4: When conducting NEPA analysis for wild horse management activities, water developments or other rangeland improvements for wild horses in PHMAs, the direct and indirect effects to sage-grouse populations and habitat will be addressed. Water developments or rangeland improvements will be implemented using the criteria identified for domestic livestock identified above in PHMAs.

MD WHB 5: Coordinate with other resources (Range, Wildlife, and Riparian) to conduct land health assessments within all BLM HMAs.

Mineral Resources (MR)

Management Decisions (MD)

Fluid Minerals (Unleased Estate)

MD MR 1: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

The BLM will allow oil and gas leasing consistent and subject to the leasing stipulations analyzed in the timing, distance, disturbance, and density restrictions sections (Map 2-2) (see Appendix B – Fluid Mineral Stipulations). Ensure that leasing activities in PHMAs comply with GRSG resource management plan decisions and remain in compliance with laws, regulations and policy.

Fluid mineral leasing will be allowed in PHMAs (core only), except in areas that are closed to leasing due to the need to protect other sensitive resources.

MD MR 2: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Geophysical exploration projects that are designed to minimize habitat fragmentation within PHMAs will be allowed, except where prohibited or restricted by existing RMP decisions, and in conformance with timing and distances Management Decisions (see Decisions MD SSS 5 through MD SSS 10).

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

The blocks of public land identified as mapped in the Casper Field Office GIS database will be managed to retain intact blocks of native vegetation (192,550 acres, of which 131,880 acres are BLM-administered surface). In these areas, the following restrictions apply:

1. These blocks are (1) unavailable for oil and gas leasing, and (2) a geophysical operation on public surface for the life of the plan. Activities for existing oil and gas leases are managed intensively (see Appendix U of the Casper RMP). Existing leases will be allowed to expire and not be renewed.
2. Within these blocks, a withdrawal from the operation of the public land laws, including the mining laws will be pursued.
3. These blocks are closed to mineral material disposal. Existing permits will be allowed to expire without renewal or expansion.
4. These blocks are not open to wind/renewable energy development.
5. These blocks remain open to livestock grazing.
6. All allowed surface-disturbing activities within the designated blocks are subject to a Controlled Surface Use (CSU) restriction, minimizing surface disturbance to meet management objectives. Decision 4024

The North Platte River Special Recreation Management Area (SRMA) will continue to be open to oil and gas leasing and geophysical operations. Decision 7039

The area is unavailable for oil and gas leasing and geophysical exploration is not allowed. Decision 7047

The MA is unavailable for new oil and gas leasing. No geophysical operations will be allowed on public surface.

Activities on existing leases will be managed intensively to meet the objectives of the MA (see Appendix U of the Casper RMP – Intensive Management). To minimize surface-disturbing activities, oil and gas exploration and development will use directional drilling techniques and well twinning whenever practicable. Decision 7059

The Red Wall/Gray Wall complex is located entirely within the South Bighorns/Red Wall MA and is unavailable for new oil and gas leasing. No geophysical operations will be allowed on public surface. Activities

on existing leases will be intensively managed to meet the objectives of the MA (see Appendix U of the Casper RMP– Intensive Management). To minimize surface-disturbing activities, oil and gas exploration and development will use directional drilling techniques and well twinning whenever practicable. Decision 7063

Those lands currently open to oil and gas leasing will continue to be open to geophysical operations. Those lands open to oil and gas leasing, but subject to a No Surface Occupancy (NSO) restriction, may be open to geophysical operations should site specific NEPA analysis disclose a finding of no significant impact. No geophysical operations are allowed in areas closed for oil and gas leasing. Decision 2019

Kemmerer RMP:

Allow for geophysical exploration on lands throughout the planning area subject to identified conditions of approval.

Newcastle RMP:

Surface-disturbing and disruptive activities associated with all types of minerals exploration and development and with geophysical exploration will be subject to appropriate mitigation measures determined through, but not limited to, use of the Wyoming BLM Mitigation Guidelines.

Pinedale RMP:

Vehicle-based geophysical activities will be assessed on a case-by-case basis.
The use of surface and/or above-ground (Poulter shot) explosive charges for geophysical exploration will be assessed case by case.
Geophysical projects, including projects proposed in areas with an NSO restriction, will be analyzed and mitigation developed on a case-by-case basis.
Geophysical activities that are considered casual use actions are allowed within 0.25 mile of active sage-grouse leks provided that:

- Operations are conducted on designated roads and trails.
- Operations during the breeding season (March 1 through May 15) are conducted between the hours of 8:00 a.m. and 8:00 p.m.
- A 150-foot wide strip of undisturbed sagebrush is maintained around the perimeter of the lek for hiding and escape cover.

Rawlins RMP:

All lands open to oil and gas leasing consideration will also be open to geophysical exploration, subject to appropriate resource surveys, surface protection measures, adequate bonding, and adherence to State of Wyoming standards for geophysical operations.

Vehicular use for "necessary tasks" (as defined in the glossary), such as geophysical exploration including project survey and layout, will be permitted except where specifically prohibited (e.g., some SD/MAs).

Green River RMP:

Geophysical exploration (vehicles and detonation) activities will be prohibited within 0.5 mile of the Pinnacles Geologic Feature. Areas of sensitive heritage resources and geologic features, such as Boars Tusk, White Mountain Petroglyphs, special status plant species, WSAs, and historic trails, will remain closed. Receiver lines may be laid using foot traffic within these areas. Exceptions to these restrictions may be granted on a case-by-case basis subject to appropriate site-specific analysis and mitigation requirements.

The remainder of the planning area will be open to geophysical exploration, with application of appropriate mitigation. Rights-of-way limitations in the planning area apply to on- and off-road vehicle traffic used for geophysical activities. Exploration activities will be allowed in sensitive resource areas only if they can be performed with acceptable mitigation of impacts.

JMH CAP:

Geophysical exploration (vehicles and detonation) activities will be prohibited within 0.5 mile of the Pinnacles Geologic Feature. Areas of sensitive heritage resources and geologic features, such as Boars Tusk, White Mountain Petroglyphs, special status plant species, WSAs, and historic trails, will remain closed. Receiver lines may be laid using foot traffic within these areas. Exceptions to these restrictions may be granted on a case-by-case basis subject to appropriate site-specific analysis and mitigation requirements.

The remainder of the planning area will be open to geophysical exploration, with application of appropriate mitigation. Rights-of-way limitations in the planning area apply to on- and off-road vehicle traffic used for geophysical activities. Exploration activities will be allowed in sensitive resource areas only if they can be performed with acceptable mitigation of impacts.

Fluid Minerals (Leased Estate)

MD MR 3: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

In cases where federal oil and gas leases have been issued with stipulations varying from those in Appendix B for the protection of sage-grouse or their habitats, as provided in the applicable RMP decision, as revised or amended, their inclusion as APD COAs will be considered when approving exploration and development activities through completion of the environmental record of review (43 CFR 3162.5 and 36 CFR 228.108), including appropriate documentation of compliance with NEPA.

Overall consideration shall be given to minimizing the impact to sage-grouse through a project design that avoids, minimizes, reduces, rectifies, and/or adequately compensates for direct and indirect impacts to PHMAs or use and includes applicable and technical COAs. Selection and application of these measures shall be based on current science and research on the effects to important breeding, nesting, brood-rearing, and wintering areas. For proposed operations in PHMAs, the Surface Use Plan of Operations (see 43CFR 3162.3-1(f)) shall address, at a minimum, the anticipated noise, density and amount of disturbance, mechanical movement (e.g., pump jacks), permanent and temporary facilities, traffic, phases of development over time, offsite mitigation, and expected periods of use associated with the proposed project. Seasonal habitats or project features related to potential sage-grouse impacts that are not addressed in the Surface Use Plan of Operations based on site-specific or project-specific considerations shall be noted in the project file, along with a rationale for not including them.

In this process the BLM will evaluate, among other things:

1. Whether the conservation measure is "reasonable" (43 CFR 3101.1-2) and consistent with valid existing rights
2. Whether the action is in conformance with the approved LUP; and the effectiveness of the proposed mitigation measures.

The BLM will work with project proponents in these situations to promote measurable sage-grouse conservation objectives such as, but not limited to, consolidation of project related infrastructure to reduce habitat fragmentation and loss and to promote effective conservation of seasonal habitats and PHMAs (connectivity only) that support population management objectives set by the state.

The BLM will continue to work with project proponents and the WGFD to site their projects in locations that meet the purpose and need for their project, but have been determined to contain the least sensitive habitats (based on vegetation, topography, or other habitat features) and resources whether inside or outside of PHMAs (utilizing DDCT analysis process). Valid existing rights will be recognized and respected.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Kemmerer RMP:

Choose and implement appropriate mitigation in a timely manner to minimize decreases in habitat function.

Utilize appropriate voluntary offsite compensatory mitigation to reduce impacts. This will be necessary if (1) all onsite mitigation has been accomplished and adverse effects have not been mitigated; or (2) if onsite mitigation is not feasible.

Pinedale RMP:

Offsite mitigation proposed by oil and gas or other operators can be considered and analyzed in future environmental documents as mitigation for proposed activities within the planning area. Proposed offsite mitigation will be described and analyzed for effectiveness in detail on a project-specific basis. Offsite mitigation will conform to requirements in the Pinedale RMP regarding the order of use of mitigation methods,

stipulations applied to offsite mitigation measures, and priority order for mitigating resource impacts onsite or offsite.

Green River RMP:

Development actions will be analyzed on a case-by-case basis to identify mitigation needs to meet RMP objectives, provide for resource protection, and provide for logical development. Limitations on the amount, sequence, timing, or level of development may occur. This may result in transportation planning and in limitations in the number of roads and drill pads, or deferring development in some areas until other areas have been restored to previous uses.

JMH CAP:

COAs attached to an APD will be based on site-specific NEPA or other analysis and will establish specific, necessary mitigation measures not covered by stipulations for resource and environmental protection. Some areas will need more intensive mitigation measures to protect sensitive resources and provide for public health and safety. These intensive mitigation measures or COAs will mostly apply to areas with overlapping sensitive resources (e.g., Areas 2 and 3). Examples of intensive mitigation that can apply to all activities based on site-specific analysis include offsite placement of facilities, remote control monitoring, restricted or prohibited surface use including road construction, multiple wells from a single pad, central tank batteries/facilities, and pipelines and power lines concentrated in specific areas. In addition, refer to Section 3.12.3 for additional mitigation measures that may apply as part of the transportation plan.

MD MR 4: Within PHMAs, field offices will work with project proponents (including those within BLM) to site their projects in locations that minimize impacts to sensitive resources.

MD MR 5: Master Development Plans will be considered and encouraged for projects involving multiple proposed disturbances within PHMAs.

MD MR 6: Within PHMAs, unitization will be encouraged as a means of minimizing adverse impacts to sage-grouse to reduce fragmentation and surface disturbing and disruptive activities.

MD MR 7: The BLM shall closely examine the applicability of categorical exclusions in PHMAs and GHMAs. If extraordinary circumstances review is applicable, the BLM shall determine whether those circumstances exist. For proposed actions in PHMAs, determine whether a categorical exclusion is applicable and if so, closely examine the extraordinary circumstances, if applicable, to determine whether one or more exists that will require preparation of a NEPA analysis. If a categorical exclusion applies, and no extraordinary circumstances exist, determine whether preparing a NEPA analysis will help inform decision making.

MD MR 8: Federal Regulations, 43 CFR 3104.1 requires that a bond be furnished before any drilling or surface disturbance activities begin. The lessee, sublessee or the operator must furnish a surety or personal bond in the amount of at least $10,000 to ensure compliance with all the lease terms, including protection of the environment. With the consent of the surety and principal, the operator may use the bond of another party, such as the lessee. Each time there is a new operator, that operator must notify the BLM that he/she is the responsible operator, giving the particulars of the bond under which he/she will operate. The BLM can require an increase in a bond amount any time conditions warrant such an increase.

A reclamation bond will be required on all projects that is commensurate with the scope, scale, size of the project within PHMAs. Partial bonding may be appropriate depending on these factors.

MD MR 9: <u>Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:</u>

Produced water from coalbed natural gas (CBNG) wells will be treated and disposed of in collaboration and consistent with the requirements of the state, and required design features specified in Management Action 10 (see Appendix C).

<u>Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:</u>

Pinedale RMP:

Produced water from CBNG wells will be treated and disposed of in collaboration and consistent with the requirements of the state.

MD MR 10: Specific to management for GRSG, within PHMAs (core only), all RMPs are amended as follows:

Where the federal government owns the mineral estate, and the surface is in non-federal ownership, apply the same stipulations, COAs, and/or conservation measures and RDFs applied if the mineral estate is developed on BLM-administered lands in that management area, to the maximum extent permissible under existing authorities, and in coordination with the landowner.

Within PHMAs (non-core only) and outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Pinedale RMP:

BLM-permitted actions on split estate lands are subject to the same stipulations as leased federal mineral estate on federal surface lands, provided the stipulations do not adversely affect the surface owner's land use or actions. Exceptions to surface development restrictions may be granted if requested or agreed to by the surface owner.

MD MR 11: Within PHMAs where the federal government owns the surface and the mineral estate is in non-federal ownership, apply appropriate surface use COAs, stipulations, and mineral RDFs through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.

Locatable Minerals

MD MR 12: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

252,160 acres within SFAs (see MD SSS 14 for identification of SFAs) will be recommended for withdrawal from the General Mining Act of 1872, subject to valid existing rights. A total of approximately 21,251,690 acres are open to locatable mineral location and entry (Map 2-3). Operators may be requested to submit modifications to the accepted notice or approved plan of operations so that the operations minimally impact PHMAs. The AO may convey to the operator suggested conservation measures, based upon the notice or plan level operations and the geographic area of those operations (also called the project area which is defined in 43 CFR 3809.5 and 36 CFR 228.3).

These suggested conservation measures include measures that support the overall goals and objectives of the core population area strategy, though measures listed for protection of sage-grouse breeding, nesting, brood-rearing, and wintering may not be reasonable or applicable to the BLM's determination of whether the proposed operations will cause unnecessary or undue degradation under 43 CFR 3809.5 and 36 CFR 228.3. The request containing the suggested conservation measures must make clear that the operator's compliance is not mandatory.

Notices or Plans of Operation, or modifications thereto, submitted following the issuance of this guidance: As part of the 15 day completeness review of notices [or modifications thereto] and 30 day completeness review of plans of operations [or modifications thereto], the proposed project area(s) where exploration, development, mining, access and reclamation will take place shall be reviewed for overlap of PHMAs in the corporate GIS database. If there is overlap, the BLM AO may notify the operator of ways that they may minimize impacts to PHMAs and request the operator to amend its notice or plan to include such measures. The request to amend the submitted notice or plan of operations must make clear that the operator's compliance is not mandatory and that including such measures is not a requirement for completeness of either the notice or a plan of operations, nor is it a condition of acceptance of the notice or approval of the plan of operations.

For values other than GRSG, the following RMP decisions remain in effect:

1,785,230 acres are withdrawn from mineral entry for the protection of sensitive resources.

Salable Minerals

MD MR 13: PHMAs will be open to mineral material exploration, sales, and free use permits, except in areas that are unavailable due to the need to protect other resource values.

All salable mineral activities within PHMAs will be considered, provided they can be completed in compliance within surface occupancy, seasonal restrictions, and disturbance and density stipulations (Map 2-4 and MD SSS 2, 3, 5 through 10) analyzed through the DDCT process.

MD MR 14: Within PHMAs closure and restoration of salable mineral pits no longer in use will be considered to meet sage-grouse habitat conservation objectives. Emphasis will be given to reclamation/restoration of PHMAs as a viable long term goal to improve sage-grouse habitat.

Non-Energy Leasable Minerals

MD MR 15: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

All non-energy leasable mineral activities will be considered in PHMAs, provided that the activities can be completed in compliance with all occupancy, timing, density and disturbance restrictions (Map 2-5).

Exploration licenses and prospecting permits will be considered with appropriate mitigating measures.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Portions of PHMAs will be unavailable for leasing in accordance with existing RMP decisions for resource values other than GRSG.

Kemmerer RMP:

Sodium: All public lands (outside of the Raymond Mountain WSA and exceptions identified below) within the planning area are available for sodium leasing consideration. Exploration for sodium will be considered on a case-by-case basis. Limited surface occupancy criteria contained in the Sodium Mineral Development Environmental Assessment will be applied on a case-by-case basis. No new sodium leases or exploration licenses may be issued on lands within the Raymond Mountain WSA. No new sodium exploration and leasing will be considered for Rock Creek/Tunp and Bear River Divide management areas.

Phosphate: All public lands (outside of the Raymond Mountain WSA and exceptions identified below) within the planning area are available for phosphate leasing consideration. Exploration for phosphate will be considered on a case-by-case basis. No new phosphate exploration and leasing will be considered for Rock Creek/Tunp and Bear River Divide management areas.

Pinedale RMP:

Should interest in other leasable minerals materialize in the future, leasing will be considered on a case-by-case basis, and the RMP will be amended as appropriate and necessary. The same surface disturbance restrictions will be used in analyzing leasing proposals and determining the issuance of any leases (for example, geothermal steam, coal, sodium, oil shale, and phosphate).

Green River RMP/JMH CAP:

The known sodium leasing area is open to exploration and consideration for leasing and developments, but is closed to prospecting permits.

The remainder of the planning area is open to sodium prospecting except for areas that are closed to mineral leasing, surface mining, or mechanical prospecting type activities (areas closed to drilling, off road vehicle use, and explosive charges).

Sodium (trona) leasing will be considered on a case-by-case basis, and is subject to the same conditional requirements as oil and gas and coal, and the general management direction applied in this RMP.

Solid Leasable Minerals

MD MR 16: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

At the time an application for a new coal lease or lease modification is submitted to the BLM, the BLM will determine whether the lease application area is "unsuitable" for all or certain coal mining methods pursuant to 43 CFR 3461.5. PHMA is essential habitat for maintaining GRSG for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1). The BLM will also consider that FWS has found "the core area strategy…if implemented by all landowners via regulatory mechanisms, would provide adequate protection for sage-grouse and their habitats in the state" when considering leasing coal in PHMA under the criteria set for at 43 CFR 3461.5(o)(1).

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

If coal development potential is shown to exist, all BLM-administered lands outside the Coal Development Potential Area (CDPA) will be considered for coal leasing, unless specifically closed to mineral leasing. The coal-screening process will be completed on all newly identified lands having coal development potential.

All BLM-administered lands within the CDPA identified in the 2001 Buffalo RMP maintenance action are acceptable for further consideration for coal leasing. The only exceptions are those lands determined unacceptable within the area or those lands that fall within PHMAs. The coal unsuitability criteria are re-evaluated whenever new coal lease applications are received.

Kemmerer RMP:

Process new coal lease applications by using the coal screening process. The coal screening process results will determine which lands may be available for further consideration for coal leasing and development. Appropriate NEPA analysis will be required prior to leasing. Federal land within the proposed Haystack project area outside of the PHMA is determined acceptable for further consideration for coal leasing and development. No coal LBAs will be considered for Rock Creek/Tunp and Bear River Divide management areas.

Pinedale RMP:

Decisions on lands acceptable for leasing consideration for coal development will be made after an application is received and the coal screening process is conducted.

Rawlins RMP:

Federal coal lease applications will be accepted only on those federal coal lands with development potential identified as suitable for further leasing consideration after application of the coal unsuitability criteria (the above-mentioned approximately 51,250 acres and 2,318.7 million tons of surface minable federal coal).

Green River RMP/JMH CAP:

Federal coal lands within the Coal Occurrence and Development Potential area (about 422,000 acres) are open to further consideration for coal leasing and development (i.e., new competitive leasing, emergency leasing, lease modifications, and exchange proposals, under the Federal Coal Management Program) with appropriate and necessary conditions and requirements for protection of other land and resource values and uses.

MD MR 17: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Upon receipt of a coal lease application proposing underground mining methods that include surface operations and impacts within PHMAs, Criterion 15 will be applied and the area will be identified as suitable for further coal leasing consideration after consultation with the state and, where applicable, surface management agency to determine that all or certain stipulated methods of coal mining will not have a significant long-term impact on sage-grouse. Stipulated methods may include, but not limited to, underground mining methods with no placement of surface facilities except for purposes of health and human safety.

Unsuitability is not applied to underground operations without surface impacts (43 CFR 3461.1) This will be consistent with Instruction Memorandum (IM) WY WY-2012-019 says that the BLM will assess potential impacts to sage-grouse through the NEPA process, and that the state regulatory agency will apply this mitigation, as well as protective measures consistent with the state policy for solid leasable mining action at the permitting stage.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

If coal development potential is shown to exist, all BLM-administered lands outside the CDPA will be considered for coal leasing, unless specifically closed to mineral leasing. The coal-screening process will be completed on all newly identified lands having coal development potential.

All BLM-administered lands within the CDPA identified in the 2001 Buffalo RMP maintenance action are acceptable for further consideration for coal leasing. The only exceptions are those lands determined unacceptable within the area. The coal unsuitability criteria are re-evaluated whenever new coal lease applications are received.

Kemmerer RMP:

Process new coal lease applications by using the coal screening process. The coal screening process results will determine which lands may be available for further consideration for coal leasing and development. Appropriate NEPA analysis will be required prior to leasing. Federal land within the proposed Haystack project area is determined acceptable for further consideration for coal leasing and development. No coal LBAs will be considered for Rock Creek/Tunp and Bear River Divide management areas.

Pinedale RMP:

Decisions on lands acceptable for leasing consideration for coal development will be made after an application is received and the coal screening process is conducted.

Rawlins RMP:

Federal coal lease applications will be accepted only on those federal coal lands with development potential identified as suitable for further leasing consideration after application of the coal unsuitability criteria (the above-mentioned approximately 51,250 acres and 2,318.7 million tons of surface minable federal coal).

Green River RMP/JMH CAP:

Federal coal lands within the Coal Occurrence and Development Potential area (about 422,000 acres) are open to further consideration for coal leasing and development (i.e., new competitive leasing, emergency leasing, lease modifications, and exchange proposals, under the Federal Coal Management Program) with appropriate and necessary conditions and requirements for protection of other land and resource values and uses.

MD MR 18: Coal exploration activities will be allowed in PHMAs if they can be completed in compliance to surface occupancy and disturbance and density stipulations analyzed through the DDCT process.

Exceptions to lease stipulations, Conditions of Approval, and terms and conditions

MD MR 19: Exceptions waivers, and modifications to lease stipulations, COAs, and terms and conditions (T&C), for sage-grouse will continue to be considered on a case-by-case basis consistent with approved LUPs and other BLM policy and regulations as they relate to exceptions within PHMAs and GHMAs.

Renewable Energy (RE)

Management Decisions (MD)

MD RE 1: Within PHMAs, all RMPs are amended as follows:

Wind energy development would be avoided in PHMAs (Map 2-6), and not allowed unless it can be sufficiently demonstrated that the development activity would not result in declines of PHMA populations. Sufficient demonstration of "no declines" should be coordinated with the WGFD and USFWS.

For values other than GRSG, the following RMP decisions remain in effect:

Areas that are currently unavailable due to the need to protect sensitive resources would remain unavailable to wind energy development.

MD RE 2: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

The use of guy wires for meteorological towers (MET) tower supports would be avoided within PHMAs. All existing and any new unavoidable guy wires should be marked with recommended bird deterrent devices.

The siting of new temporary MET towers within PHMAs would be avoided within 2 miles of occupied sage-grouse leks, unless they are out of the direct line of sight of the occupied lek.

Outside of PHMAs, the following RMP decisions remain in effect:

Kemmerer RMP:

New MET towers would be avoided within 1 mile of occupied sagebrush obligate habitats, unless anti-perch devices are installed. MET towers relying on guy wires for support would be prohibited in these habitats. Exceptions could be made if NEPA analysis shows little or no impact to sagebrush obligate species.

Rawlins RMP:

MET towers would be authorized on a case-by-case basis from 0.25 mile to 1 mile of an occupied GRSG and sharp-tailed grouse lek.

Lands and Realty (LR)

Management Decisions (MD)

Land Use Authorizations

MD LR 1: Specific to management for GRSG, all RMPs are amended as follows:

PHMAs will be managed as right-of-way (ROW) avoidance areas for new ROW or Special Use Authorization (SUA) permits (Map 2-7).

Within PHMAs where new ROWs/SUAs are necessary, new ROWs/SUAs will be located within designated RMP corridors or adjacent to existing ROWs/SUAs where technically feasible. Subject to valid existing rights including non-federal land inholdings, required new ROWs/SUAs will be located adjacent to existing ROWs/SUAs or where it best minimizes sage-grouse impacts. Consider the likelihood of development of not-yet-constructed surface-disturbing activities, as defined in Table 2 of the Monitoring Framework (Appendix D) under valid existing rights.

For values other than GRSG, the following RMP decisions remain in effect:

Portions of PHMAs will be managed as ROW exclusion areas in accordance with existing RMP decisions for resource values other than GRSG.

MD LR 2: Specific to management for GRSG, all RMPs are amended as follows:

Within GHMAs where new ROWs/SUAs are necessary, new ROWs/SUAs will be co-located within existing ROWs/SUAs where technically feasible.

Appropriate sage-grouse seasonal timing constraints will be applied.

For values other than GRSG, the following RMP decisions remain in effect:

Portions of GHMAs will be managed as ROW avoidance areas in accordance with existing RMP decisions for resource values other than GRSG.

MD LR 3: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

New Transmission Lines (greater than 115 kV):

New transmission lines greater than 115 kV in PHMAs (core only) will be allowed only (1) within the 2-mile wide transmission line route through PHMAs (core only) population areas in south-central and southwestern Wyoming (Attachment 1 from Executive Order (EO) 2015-4); (2) when located within 0.5 miles or less of an existing 115 kV or greater transmission line constructed prior to 2008; or (3) in designated RMP corridors authorized for above-ground transmission lines. Transmission lines routed using one or more of the three criteria listed above will not be counted against the DDCT 5% disturbance cap.

New transmission lines greater than 115 kV proposed outside of these areas will be considered where it can be demonstrated that declines in sage-grouse populations can be avoided through project design and/or mitigation. These projects will be subject to the density and disturbance restrictions for PHMAs.

Construction of new transmission lines will adhere to the restrictions associated with conducting activities within PHMAs.

Review of transmission line proposals will incorporate the Framework for Sage-grouse Impacts Analysis for Interstate Transmission Lines and other appropriate documents consistent with the three routing criteria described above.

New projects within PHMAs that may require future utility lines, including distribution and transmission lines or pipelines, will include the proposed utility lines in their DDCT as part of the proposed disturbance. Lines permitted but not located in the above mentioned routes or a designated corridor will be counted towards the 5% disturbance calculation (line disturbance is equal to the anticipated construction footprint or construction ROW width multiplied by length and includes all access roads, staging areas, and other surface disturbance associated with construction outside of the construction ROW).

New Electric Distribution Lines (less than 115 kV):

New electric distribution lines will be buried where feasible and economically feasible. If not economically feasible, distribution lines may be authorized when effectively designed/mitigated to protect GRSG and the AO determines that overhead installation is the action alternative with the fewest adverse impacts while still meeting the project need. Agricultural and residential lines will be considered to be adequately mitigated for GRSG if constructed at least 0.6 mile from the lek perimeter with appropriate timing constraints and constructed to the latest APLIC guidance. These ROW authorizations will be subject to approval by the State Director.

Priority Transmission Lines:

PHMAs are designated as avoidance areas for high voltage transmission line and pipeline ROWs, except for the transmission projects specifically identified below. All authorizations in these areas, other than the following identified projects, must comply with the conservation measures outlined in this proposed plan, including the Required Design Features (RDF) and avoidance criteria presented in Appendix C of this document. The BLM is currently processing an application for Gateway South, Gateway West and TransWest Express and the NEPA review for these projects is well underway. The BLM is analyzing GRSG mitigation measures through the project's NEPA review process.

Pipelines:

New pipelines through PHMAs will be allowed: (1) within an RMP corridor currently authorized for that use or designated through future RMP amendments; or (2) constructed in or adjacent to existing utilities (buried and above-ground) or roads. Pipelines constructed in RMP corridors or adjacent to existing utilities or roads will require completion of a DDCT analysis for baseline data collection but the project is not required to meet the threshold of 5%. However, within 6 months of the completion of construction, the project proponent will provide the AO with as-built drawings so that total disturbance within core area can be calculated annually.

The following RMP decisions remain in effect with the modification described above:

Casper RMP:

No new corridor designations will be made in Bates Hole. When placement of a major ROW facility within a designated corridor is not possible, and for smaller ROW and other linear facilities, placement will be adjacent to existing facilities or disturbances. Cross-country placement of ROW and other linear facilities will be allowed only when placement in a designated corridor or adjacent to an existing facility is not practical or feasible. The extent of all surface disturbances will be minimized.

No new corridors will be established in the Sand Hills Management Area (MA); ROWs will be allowed when management objectives for the area can still be achieved.

All currently designated corridors will be maintained. All special restrictions that apply to types of use/facilities on the corridors will be removed, except as noted for the Oregon Trail Road ROW Corridor, Segment A. The corridors include 351,020 acres, of which 94,580 acres are federal surface. The widths/size

of designated corridors will not change. Special restrictions applying to types of use/facilities on the corridors will be removed on a case-by-case basis. Existing corridors include:

1. Oregon Trail Road Corridor, Segment A
2. Oregon Trail Road Corridor, Segment B
3. Oregon Trail Road Corridor, Segment C
4. Poison Spider/Gas Hills Road Corridor
5. Highway 20-26 Corridor
6. Wyoming Highway 259/U.S. 87 Corridor
7. Wyoming Highway 387 Corridor
8. Lost Cabin-Arminto Road Corridor
9. RMP Change No. 2012-03, including the West Wide Energy Corridor
10. Cabin Creek Corridor
11. Existing Oregon Trail Road ROW Corridor, Segment A.

Oregon Trail Road ROW Corridor, Segment A allows additional ROW facilities provided they are subsurface, surface, or low profile developments. ROW facilities that introduce visual intrusions on the skyline along the corridor will not be allowed. Special restrictions applying to types of use/facilities on the corridors will be removed on a case-by-case basis, and a new corridor, to be called the Cabin Creek Corridor, will be designated.

Future Corridor Adjustments and New Corridor Designations:

Future corridor adjustments and new corridor designations will be made only when facility placement within an existing designated corridor is incompatible, unfeasible, or impractical and when the environmental consequences can be adequately mitigated. Problems of technical compatibility between facilities and spacing of facilities in corridors will be solved on a case-by-case basis. Special restrictions applying to types of use/facilities on the corridors will be removed on a case-by-case basis.

South Bighorns/Red Wall Management Area:

No corridors will be designated; however, ROWs will be allowed on a case-by-case basis when management objectives for the area can still be achieved.

Kemmerer RMP:

Utility corridors will be designated, based on use (i.e., power lines, pipelines, and fiber optic lines).

Preferred utility corridors will be 2 miles wide (width will be determined based on resource values) and designated as follows, but variances will be allowed based on application where conflicts with other resources were minimal or can be mitigated through resource-specific stipulations:

High-voltage power line corridors will be established north of and parallel to I-80, and along Wyoming State Highway 89 from the junction of I-80 and the Wyoming state line.

Fiber optic and low-voltage power line corridors will be located along currently established road systems (e.g., interstate or state highways and paved county roads).

Newcastle RMP:

Utility/transportation systems will be located adjacent to existing utility/transportation systems whenever practical. Areas to be avoided for new facility placement and routes will be identified on a case-by-case basis, rather than attempting to establish utility corridors.

Pinedale RMP:

Utility facilities will be restricted to existing routes and designated corridors where practicable, including environmental and socioeconomic considerations. Corridor routes include U.S. Highways 189 and 191 and State Highways 189, 191, 350, 351, 352, 353, and 354. New corridors may be established as oil and gas fields are developed.

Rawlins RMP:

All BLM-administered public lands, except wilderness study areas (WSA) and some SD/MAs (including areas of critical environmental concern (ACEC)/Special Interest Areas (SIA)), will be open to consideration for placement of utility ROW systems. Each utility ROW will be located adjacent to existing facilities, when possible. Areas with important or sensitive resource values will be avoided.

Existing major transportation and utility ROW routes will be designated corridors. However, major transportation routes within the planning area that are located east of the Carbon County-Albany County line will not be considered for ROW corridor designation because of the scattered public landownership pattern in the area. All corridors will be designated for power lines (above ground and buried), telephone lines, and fiber optic lines.

Specific proposals will require site-specific environmental analysis and compliance with established permitting processes.

Activities generally excluded from ROW corridors include mineral materials disposal, range and wildlife habitat improvements involving surface disturbance and facility construction, campgrounds, and public recreation facilities and other facilities that will attract public use.

ROW facilities will not be placed adjacent to each other if issues with safety or incompatibility or resource conflicts were identified. The designated width, allowable uses, and excluded uses for each corridor may be modified during implementation of the Approved RMP.

Green River RMP:

Areas designated as utility windows will be preferred locations for future grants. Five windows have been identified: 2 east-west, 3 north-south. Other areas will be considered for rights-of-way on a case-by-case basis. Windows 0.5 mile in width have been identified for the placement of utilities. The northern east-west window will be for underground facilities only, and the southern east-west window will be for both above and below ground facilities. A 0.5 mile wide north-south window on the west side of Flaming Gorge, a window south along Highway 430, and a north-south window along the east side of Flaming Gorge have been identified for above and below ground utilities.

JMH CAP:

The planning area, with the exception of defined exclusion and avoidance areas, will be open to considering grants of rights-of-way if area objectives can be met. Exclusion areas are closed to rights-of-way. Avoidance and special management areas not identified as exclusion areas will be open to consideration only after site-specific analysis demonstrates area objectives can be met (see glossary) in GRSG potential nesting habitat.

MD LR 4: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

Maintenance/replacement of existing structures will be allowed subject to valid and existing rights. Upgrades will be considered, subject to mandatory RDFs (Appendix C).

Existing guy wires shall be removed or appropriately marked with bird flight diverters to make them more visible to sage-grouse in flight. Power lines (distribution and transmission) will be designed to minimize wildlife related impacts and constructed to the latest APLIC standards.

Outside of PHMAs the following RMP decisions remain in effect:

Kemmerer RMP:

New utility lines will be buried or BLM-approved anti-perch devices will be installed on all new utility lines within sagebrush and/or semiarid shrub-dominated habitats, unless NEPA analysis shows little or no impact without burial or modification.

MD LR 5: Within PHMAs where existing authorizations, ROWs, or SUAs have had some level of development (e.g., road, fence, and well) and are expired and are no longer in use, the site will be reclaimed by removing these features and restoring the habitat. Power lines (distribution and transmission) will be designed to minimize wildlife related impacts and constructed to the latest APLIC standards.

MD LR 6: Within PHMAs, specific to management for GRSG, all RMPs are amended as follows:

The use of guy wires for meteorological towers (MET) tower supports will be avoided within PHMAs. All existing and any new unavoidable guy wires shall be marked with recommended bird deterrent devices.

The siting of new temporary MET towers within PHMAs will be avoided within 2 miles of occupied sage-grouse leks, unless they are out of the direct line of sight of the occupied lek.

Outside of PHMAs, the following RMP decisions remain in effect:

Kemmerer RMP:

New MET towers will be avoided within 1 mile of occupied sagebrush obligate habitats, unless anti-perch devices are installed. MET towers relying on guy wires for support will be prohibited in these habitats. Exceptions can be made if NEPA analysis shows little or no impact to sagebrush obligate species.

Rawlins RMP:

MET towers will be authorized on a case-by-case basis from 0.25 mile to 1 mile of an occupied GRSG and sharp-tailed grouse lek.

Land Tenure

MD LR 7: Within PHMAs and GHMAs, specific to management for GRSG, all RMPs are amended as follows:

Lands classified as PHMAs for GRSG will be retained in federal management unless: (1) the agency can demonstrate that disposal of the lands, including land exchanges, will provide a net conservation gain to the GRSG or (2) the agency can demonstrate that the disposal of the lands, including land exchanges, will have no direct or indirect adverse impact on conservation of the GRSG.

Exceptions will be considered where there is mixed ownership and land exchanges will allow for additional or more contiguous federal ownership patterns within PHMAs.

For PHMAs with minority federal ownership, an additional, effective mitigation agreement will be included for any disposal of federal land. As a final preservation measure, consideration shall be given to pursuing a permanent conservation easement.

For lands in GHMAs that are identified for disposal, the BLM will only dispose of such lands consistent with the goals and objectives of this plan, including, but not limited to, the RMP goal to conserve, recover, and enhance sage-grouse habitat on a landscape scale.

For values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

224,830 acres of public lands are identified as potentially suitable for disposal. At the implementation stage, site-specific analysis with public participation will be conducted. Based on the analysis and public comments received, a determination will be made on whether disposal of the parcel is in the public's best interest. If it is not in the public's best interest, the parcel will be retained in public ownership.

Restricted Disposal – dispose of 5,450 acres on a restricted basis.

Allow land-use authorizations under FLPMA Section 302(b) leases and permits to meet public demand.

Evaluate on a case-by-case basis as proposals are presented. Potential lease and permit areas may include, but are not limited to the following:

- Areas where there are documented or existing trespass facilities that can be resolved by an authorization under this section
- Areas along major highways where developments may facilitate public needs
- Areas in or adjacent to residential, agricultural, commercial, or industrial developments.

The BLM will pursue acquisition of lands and interest in lands in the South Bighorns/Red Wall area.

MD LR 8: Within PHMAs and GHMAs, specific to management for GRSG, all RMPs are amended as follows:

Areas where acquisitions (including subsurface mineral rights) or conservation easements will benefit sage-grouse habitat will be identified.

Outside of PHMAs and GHMAs, and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

The BLM will pursue acquisition of lands and interest in lands in the Bolton Creek Drainage and Bates Creek areas.

MD LR 9: Sage-grouse habitat requirements will be utilized to prioritize parcels for exchange or acquisition within PHMAs.

MD LR 10: Within PHMAs, non-mineral withdrawals will be evaluated to determine if the withdrawal action is consistent with sage-grouse conservation.

Recreation and Visitor Services (REC)

Management Decisions (MD)

MD REC 1: Specific to management for GRSG or PHMAs, all RMPs are amended as follows:

BLM Special Recreation Permits (SRP) will be allowed in PHMAs, unless negative impacts to sage-grouse cannot be adequately mitigated.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Casper RMP:

The entire planning area will remain open to dispersed recreation. The camping limit on public lands is set by BLM policy and is currently limited to 14 days. Emphasis will be placed on providing interpretive and information signs and materials for public land visitors, maintaining existing facilities to a high standard consistent with the recreational setting, and limiting development of additional facilities to those areas where public recreational use of surrounding public lands requires. Work with state, local groups, and adjacent landowners will be conducted to identify and develop recreational trails, both motorized and non-motorized, when the opportunities presents themselves. SRPs will be allowed for commercial, noncommercial, and competitive events on a case-by-case basis. Cooperation will be maintained with a variety of user groups, especially in the local area, to provide diverse recreational opportunities for enjoyment of public lands. BLM will pursue acquisition of lands and interest in lands in the Rattlesnake Range and Pine Ridge areas, as well as promote and support recreation-based tourism.

Kemmerer RMP:

Allow dispersed recreation and permit special recreational activities (e.g., outfitting and guiding permits and off-highway vehicle (OHV) events permitted on an annual basis after evaluation).

Green River RMP:

Special recreation permits will be considered on a case-by-case basis. Appropriate mitigation will be included in special recreation permits, commercial recreation uses, and major competitive recreation events to provide resource protection and public safety.

JMH CAP:

Special recreation use permits for managed activities that occur in the JMH CAP planning area will be reviewed and subject to recommendations made by the Rock Springs Field Office. This will allow the Rock Springs Field Office to track the amount, location, and timing of organized activity occurring within the planning area to monitor resource pressure. The permit evaluation process will consider the nature of the event, potential impacts to resources, conflicts with other events, and impacts to the quality of other visitors' experiences. Mitigation measures necessary to protect the resources will be included in any permit issued. A plan of operation will be required for all commercial recreational operators and outfitters. The plan will describe the type, extent, and location of the recreation use and the mechanisms by which the operator/outfitter will prevent impacts to environmental resources. Any requests in special recreation use permit applications to remove natural resources will be evaluated on a case-by-case basis after an environmental analysis process.

MD REC 2: Construction of recreation facilities within PHMAs must conform with the avoidance and minimization measures of this plan. If it is determined that these conservation measures are inadequate for the conservation of GRSG, the BLM will require and ensure compensatory mitigation that provides a net conservation gain to the species.

Travel and Transportation (TTM)

Management Decisions (MD)

MD TTM 1: Specific to management for GRSG, all RMPs are amended as follows:

Within PHMAs, designate the non-sand dune portions of the following OHV Open Areas as OHV Limited Area. The OHV limitation will ultimately be to "Designated Routes" as determined through a subsequent implementation/activity level Travel Management Plan. In the interim, motorized use on existing routes may occur; however, no new routes may be created without specific authorization: Rawlins Field Office: Dune Pond Cooperative Management Area.

Rock Springs Field Office: Portion of the Greater Sand Dunes Recreation Area.

The following RMP decisions remain in effect:

The Casper Field Office Poison Spider OHV Park (290 acres) will remain as an "open" OHV area.

MD TTM 2: Within PHMAs and GHMAs, all motorized use (of which OHVs are a subset) will be limited to designated routes. Route designations will occur in subsequent implementation/activity level Travel Management Plans. In the interim motorized use on existing routes may occur; however, no new routes may be created without specific authorization. In PHMAs and GHMAs, temporary closures will be considered in accordance with 43 CFR subpart 8364 (Closures and Restrictions); 43 CFR subpart 8351 (Designated National Area); 43 CFR subpart 6302 (Use of Wilderness Areas, Prohibited Acts, and Penalties); 43 CFR subpart 8341 (Conditions of Use).

Temporary closure or restriction orders under these authorities are enacted at the discretion of the AO to resolve management conflicts and protect persons, property, and public lands and resources. Where an AO determines that off-highway vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2) A closure or restriction order shall be considered only after other management strategies and alternatives have been explored. The duration of temporary closure or restriction orders shall be limited to 24 months or less; however, certain situations may require longer closures and/or iterative temporary closures. This may include closure of routes or areas.

MD TTM 3: New local or collector roads (as defined in BLM Manual 9113) will be avoided within 1.9 miles of the perimeter of occupied sage-grouse leks within PHMAs.

All new roads will be prohibited within 0.6 miles of the perimeter of occupied sage-grouse leks within PHMAs.

MD TTM 4: Within PHMAs, no upgrading of existing routes that will change route category or capacity will be allowed unless the upgrading will have minimal impact on sage-grouse in PHMAs, was necessary for motorist safety, or eliminated the need to construct a new road.

MD TTM 5: In PHMAs, existing roads or realignments will be used to access valid existing rights that are not yet developed. If valid existing rights cannot be accessed via existing roads, any new road will be constructed to the absolute minimum standard necessary, and the surface disturbance will be added to the total disturbance in the PHMA.

MD TTM 6: Specific to management for GRSG or PHMAs, all RMPs are amended as follows:

For roads, primitive roads and trails not designated in travel management plans within PHMAs, natural reclamation of roads and trails will be allowed in appropriate situations where additional resource damage is not foreseeable.

This will include primitive route/roads that were not designated in wilderness study areas and within lands with wilderness characteristics that have been selected to be managed to retain those characteristics for protection.

In PHMAs, locate new roads that will have relatively high levels of activity (accessing multiple wells, housing development) greater than 1.9 miles from the perimeter of occupied GRSG leks. Locate new other roads used to provide facility site access and maintenance >0.6 miles from the perimeter of occupied GRSG leks.

Outside of PHMAs and/or for values other than GRSG, the following RMP decisions remain in effect with the modification described above:

Kemmerer RMP:

Roads and two-track routes determined to be unauthorized or redundant and unnecessary for resource management purposes will be reclaimed to achieve surrounding native conditions.

Rawlins RMP:

Roads or trails that are eroding beyond a reasonable level will be fixed or closed.

JMH CAP:

Transportation planning will provide for access to achieve multiple-use goals while providing maximum protection for crucial habitats and sensitive resources and will consider:

Closing and rehabilitating unused roads and trails and those causing resource damage. This will be subject to county review of existing rights-of-way needs.

MD TTM 7: Within PHMAs, when reseeding roads and trails, appropriate seed mixtures will be used and the use of transplanted sagebrush will be considered.

Special Designations and Other Management Areas (SDMA)

Management Decisions (MD)

MD SDMA 1: New sage-grouse conservation ACECs will not be designated.

3. Consultation, Coordination, and Public Involvement

The BLM land use planning activities are conducted in accordance with NEPA requirements, CEQ regulations, and Department of the Interior and BLM policies and procedures implementing NEPA. The NEPA and associated laws, regulations, and policies require the BLM to seek public involvement early in, and throughout, the planning process. Public involvement and agency consultation and coordination, which have been at the heart of the planning process leading to this ARMPA, were achieved through Federal Register notices, public and informal meetings, individual contacts, media releases, planning bulletins, and the Wyoming GRSG website. (https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=9153)

3.1 Consultation and Coordination

The BLM collaborated with numerous agencies, municipalities, and tribes throughout the preparation of this ARMPA. The BLM outreach efforts and collaboration with cooperating agencies are described in Section 5.1 of the Proposed RMP Amendments and Final EIS. The following agencies accepted the offer to participate in the BLM planning process as cooperating agencies:

- City of Laramie
- Converse County

- Crook County
- The Governor's Office
- Lincoln County
- Lincoln County Conservation District
- Lingle–Fort Laramie Conservation District
- Little Snake River Conservation District
- Medicine Bow Conservation District
- Natrona County
- Saratoga Encampment Rawlins Conservation District
- South Goshen Conservation District
- Sublette County
- Sublette County Conservation District
- Sweetwater County
- Sweetwater County Conservation District
- Uinta County
- Uinta County Conservation District
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U.S. Department of Agriculture: Animal and Plant Health Inspection Service
- Weston County
- Wyoming Department of Environmental Quality
- Wyoming Department of Agriculture
- Wyoming Game and Fish Department
- Wyoming State Historic Preservation Office
- Wyoming State Planning Office.

The BLM formally invited the cooperating agencies to participate in developing the alternatives for the RMPA and EIS and to provide data and other information related to their agency responsibilities, goals, mandates, and expertise.

Section 7 Consultation

In accordance with Section 7 of the Endangered Species Act of 1973 (ESA), as amended, BLM requested a species list from USFWS of any federally listed, federally proposed, or current federal candidate species that may be present in the RMP planning area in 2011. This species list was updated through ongoing consultation with the USFWS as the project progressed. The BLM initiated informal consultation with the USFWS under Section 7 of the ESA on March 7, 2015. Informal Section 7 consultation was completed on June 17, 2015, when the USFWS provided a letter of Concurrence on "not likely to affect" and "no jeopardy" determinations.

Native American Consultation

In accordance with FLPMA and BLM guidance, the BLM engaged in consultation with Native American representatives for the RMPA planning process. The BLM maintained ongoing communications with relevant Native American groups, including the following:

- Shoshone-Bannock Tribes of the Fort Hall Reservation
- Blackfeet Tribe
- Fort Peck Assiniboine/Sioux Tribe
- Northern Cheyenne Tribe
- Santee Sioux Tribe
- Standing Rock Sioux Tribe
- Cheyenne River Sioux Tribe
- Crow Creek Sioux Tribe

- Oglala Sioux Tribe
- Rosebud Sioux Tribe
- Sisseton-Wahpeton Oyate Tribe
- The Ute Tribe of the Uintah and Ouray Reservation
- Eastern Shoshone Tribe
- Northern Arapaho Tribe
- Three Affiliated Tribes – Mandan, Hidatsa and Arikara Nation
- Yankton Sioux Tribe
- Lower Brule Sioux Tribe
- Crow Tribe

As part of the NEPA scoping and consultation process, and as an opportunity to provide comment pursuant to Section 106 of the NHPA, the BLM notified the Wyoming State Historic Preservation Officers (SHPO) seeking information regarding concerns with historic properties and land use planning direction included in these ARMPA. The BLM sought information about historic properties in consideration of land use planning decisions included in this ARMPA in accordance with the National Programmatic Agreement (PA) between the BLM, Advisory Council on Historic Preservation, and National Conference of State Historic Preservation Officers and the State Protocol Agreement between the BLM and the SHPO. The BLM incorporated the information it received from SHPOs and Tribes into the Proposed RMPAs and considered such information in making the land use plan amendment decisions. The BLM has met its obligations under Section 106 of the NHPA, 54 U.S.C. § 306108, as outlined in the National PA and the State Protocols.

The BLM initiated the Wyoming Governor's Consistency Review required by 43 CFR 1610.3-2(e) by letter from the BLM State Director dated May 29, 2015. The BLM received a letter from the Wyoming Governor dated July 29, 2015. The Governor's Office advised the BLM the Proposed RMP had a number of inconsistencies and provided recommendations. The recommendations had been raised during public participation and included questions regarding air and water quality and conformance with the Wyoming Governor's Core Area Strategy for GRSG conservation. The BLM State Director accepted some of the recommendations, did not accept others, and advised the Governor of his decision in writing.

3.2 Public Involvement

The public involvement process, consultation, and coordination conducted for the RMP are described in Chapter 5 of the Proposed RMP Amendments and Final EIS. As required by regulation, public scoping meetings were conducted following the publication of the Notice of Intent to prepare an EIS in the Federal Register on May 28, 2010.

A Notice of Availability (NOA) for the Draft RMPA/EIS was published in the Federal Register on December 27, 2013. The NOA initiated a 90-day public comment period. The BLM held a total of six public comment open houses for the Draft RMPA/EIS in Douglas, Casper, Laramie, Pinedale, Rock Springs, and Rawlins, Wyoming on February 4, 5, 6 and 11, 12, 13, 2014, respectively. All meetings were from 5:00 to 7:00 PM. The comments received on the Draft RMPA and EIS and BLM's responses were summarized in Appendix O of the Proposed RMP and Final EIS.

The NOA for the Proposed RMP and Final EIS was published on May 29, 2015 initiating a 30 day public protest period and a 60 day Governors Consistency review period. The 30-day protest period ended on June 29, 2015. Twenty-five protest letters were received.

4. Plan Implementation

4.1 Implementing the Plan

Implementation, after a BLM RMP or RMP amendment is approved, is a continuous and active process. Decisions presented as Management Decisions can be characterized as *immediate* or *one-time future* decisions.

Immediate Decisions: These decisions are the lands use planning decisions that go into effect upon signature of the ROD. These include goals, objectives, allowable uses and management direction, such as the allocation of lands as open or closed for saleable mineral sales, lands open with stipulations for oil and gas leasing, and OHV area designations. These decisions require no additional analysis and guide future land management actions and subsequent site specific implementation decisions in the planning area. Proposals for future actions such as oil and gas leasing, land adjustments, and other allocation-based actions will be reviewed against these land use plan decisions to determine if the proposal is in conformance with the plan.

One-Time Future Decisions: These types of decisions include those that are not implemented until additional decision-making and site-specific analysis is completed. Examples are implementation of the recommendations to withdraw lands from locatable mineral entry or development of travel management plans. Future one-time decisions require additional analysis and decision-making and are prioritized as part of the BLM budget process. Priorities for implementation of "one-time" RMP decisions will be based on several criteria, including:

- Current and projected resource needs and demands
- National BLM management direction
- Available resources.

General Implementation Schedule of "One-Time" Decisions: Future Decisions discussed in this ARMPA will be implemented over a period of years depending on budget and staff availability. After issuing the ROD, BLM will prepare implementation plans that establish tentative timeframes for completion of "one-time" decisions identified in the ARMPA. These actions require additional site specific decision-making and analysis.

This schedule will assist BLM managers and staff in preparing budget requests and in scheduling work. However, the proposed schedule must be considered tentative and will be affected by future funding, changing program priorities, non-discretionary workloads, and cooperation by partners and external publics. Yearly review of the plan will provide consistent tracking of accomplishments and provide information that can be used to develop annual budget requests to continue implementation.

Appendix D includes a framework for implementation of GRSG conservation measures within the planning area. This framework is focused specifically on GRSG and does not address implementation of other resource programs. Implementation for GRSG includes a combination of permitting activities under the auspices of management direction provided in the ARMPA, undertaking specific activities in pursuit of the goals and objectives identified in the plan, and monitoring of sagebrush habitat and populations.

4.2 Maintaining the Plan

The ARMPA can be maintained as necessary to reflect minor changes in data. Plan maintenance is limited to further refining or documenting a previously approved decision incorporated in the plan and/or clarifying previously approved decisions.

The BLM expects that new information gathered from field inventories and assessments, research, other agency studies, and other sources will update baseline data and/or support new management techniques, best management practices, and scientific principles. Where monitoring shows land use plan actions or best management practices are not effective, plan maintenance or plan amendment may be initiated, as appropriate.

Plan maintenance will be documented in supporting records. Plan maintenance does not require formal public involvement, interagency coordination, or the NEPA analysis required for making new land use plan decisions.

4.3 Changing the Plan

The ARMPA may be changed, should conditions warrant, through a plan amendment or plan revision process. A plan amendment may become necessary if major changes are needed or to consider a proposal or action that is not in conformance with the plan. The results of monitoring, evaluation of new data, or policy changes and changing public needs might also provide a need for a plan amendment. If several areas of the plan become

outdated or otherwise obsolete, a plan revision may become necessary. Plan amendments and revisions are accomplished with public input and the appropriate level of environmental analysis conducted according to the Council on Environmental Quality procedures for implementation of the National Environmental Policy Act.

As new occupied sage-grouse habitat is found or occurs either through additional inventories or expansion into previously unoccupied habitat, the BLM will coordinate with the SGIT and USFWS and use the best scientific information available to revise GRSG habitat management area maps and associated management decisions through plan maintenance or plan amendment/revisions, as appropriate.

4.4 Plan Evaluation, Monitoring, and Adaptive Management

Plan evaluation is the process by which the plan and monitoring data are reviewed to determine if management goals and objectives are being met and if management direction is sound. Land use plan evaluations determine if decisions are being implemented, whether mitigation measures are satisfactory, whether there are significant changes in the related plans of other entities, whether there is new data of significance to the plan, and if decisions should be modified via amendment or revision. Monitoring data gathered over time is examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why. Conclusions are then used to make recommendations on whether to continue current management or to identify what changes need to be made in management practices to meet objectives.

The BLM will use land use plan evaluations to determine if the decisions in the ARMPA, supported by the accompanying NEPA analysis, are still valid in light of new information and monitoring data. Evaluations will follow the protocols established by the BLM Land Use Planning Handbook (H-1601-1) or other appropriate guidance in effect at the time the evaluation is initiated. The Monitoring Framework for this ARMPA can be found in Appendix D.

The ARMPA also includes an adaptive management strategy that includes soft and hard triggers and responses. These triggers are not specific to any particular project, but identify habitat and population thresholds. Triggers are based on the two key metrics that are being monitored during the life of the ARMPA - habitat loss and/or population declines. Soft triggers represent an intermediate threshold indicating that management changes are needed at the implementation level to address habitat or population losses. If a soft trigger is tripped during the life of the plans, the BLM's response is to apply more conservative or restrictive conservation measures to mitigate for the specific causal factor in the decline of populations and/or habitats, with consideration of local knowledge and conditions. These adjustments will be made to preclude tripping a "hard" trigger (which signals more severe habitat loss or population declines). Hard triggers represent a threshold indicating that immediate action is necessary to stop a severe deviation from sage-grouse conservation objectives set forth in the ARMPA.

In the event that new scientific information becomes available demonstrating that the hard wired response would be insufficient to stop a severe deviation from sage-grouse conservation objectives set forth in the ARMPA, the BLM will implement interim management direction to ensure that conservation options are not foreclosed. The BLM will also undertake any appropriate plan amendments or revision if necessary. More information regarding the ARMPA's adaptive management strategy can be found in Appendix D and outlined in the adaptive management direction in Section 2.2 of this ARMPA.

5. Glossary

Active Lek: Any lek that has been attended by male GRSG during the strutting season.

Activity Planning: Site-specific planning that precedes development. This is the most detailed level of Bureau of Land Management (BLM) planning. An activity plan details management of one or more resources on a specific site. Examples are allotment management plans and recreation area management plans. Activity plans implement decisions made in the Resource Management Plan (RMP).

Actual Use: Where, how many, what kind or class of livestock, and how long livestock graze on an allotment or on a portion or pasture of an allotment.

Adaptive Management: A systematic process for continually improving management policies and practices by learning from the outcomes of actions over time. It employs management programs that are designed to continuously compare selected policies or practices and is an integrated method for addressing uncertainty that focuses on implementing actions, thoroughly monitoring results, and modifying actions when warranted. It recognizes that the complex interrelationships of physical, biological, and social components of the ecosystem and how they would react to land management practices are often not fully understood when land-use management plans are developed.

Additionality: The conservation benefits of compensatory mitigation are demonstrably new and would not have resulted without the compensatory mitigation project (BLM Manual Section 1794).

Administrative Access: Access for resource management and administrative purposes such as fire suppression, cadastral surveys, permit compliance, law enforcement, and military in the performance of their official duty, or other access needed to manage BLM-administered lands or uses.

Age Class: A distinct aggregation of trees originating from a single natural event or regeneration activity, or grouping of trees, e.g. 10-year age class, as used in inventory or management.

Allotment: An area of land designated and managed for livestock grazing. Allotments generally consist of BLM-administered lands but may include other federally managed, state-owned, and private lands. An allotment may include one or more separate pastures. Livestock numbers and periods of use are specified for each allotment.

Allotment Management Plan (AMP): A documented program developed as an activity plan, consistent with the definition at 43 USC 1702(k), that focuses on, and contains the necessary instructions for, management of livestock grazing on specified public lands to meet resource condition, sustained yield, multiple use, economic, and other objectives.

Ambient (noise level): Sometimes called background noise level, reference sound level, or room noise level is the background sound pressure level at a given location, normally specified as a reference level to study a new intrusive sound source.

Amendment: The process for considering or making changes in the terms, conditions, and decisions of approved RMPs or Management Framework Plans using the prescribed provisions for resource management planning appropriate to the proposed action or circumstances. Usually only one or two issues are considered that involve only a portion of the planning area.

Animal Unit: Considered to be one mature cow of about 1,000 pounds (450 kg), either dry or with calf up to 6 months of age, or their equivalent, consuming about 26 pounds of forage/day on an oven dry basis.

Animal Unit Month (AUM): The amount of forage required for an animal unit for a period of 1 month.

Anthropogenic Disturbances: Human-created features that include but are not limited to paved highways, graded gravel roads, transmission lines, substations, wind turbines, oil and gas wells and associated facilities, geothermal wells and associated facilities, pipelines, landfills, agricultural conversion, homes, and mines.

Application for Permit to Drill (APD): An application to drill a well submitted by a lessee or operator to the BLM. The APD consists of a Drilling Plan that discusses downhole specifications and procedures (reviewed by the BLM) and a Surface Use Plan of Operations that examines surface uses, including access roads, well site layout, cut and fill diagrams, reclamation procedures, production facility locations, etc.

Area of Critical Environmental Concern (ACEC): Areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The identification of a potential ACEC shall not, of itself, change or prevent change of the management or use of public lands.

Assessment: The act of evaluating and interpreting data and information for a defined purpose.

Authorized/Authorized Use: This is an activity (i.e., resource use) occurring on the public lands that is either explicitly or implicitly recognized and legalized by law or regulation. This term may refer to those activities occurring on the public lands for which the BLM or other appropriate authority (e.g., Congress for RS 2477 rights-of-way, FERC for major, interstate rights-of-way), has issued a formal authorization document (e.g., livestock grazing lease/permit; right-of-way grant; coal lease; oil and gas permit to drill; etc.). Formal authorized uses can involve both commercial and noncommercial activity, facility placement, or event. These authorized uses are often spatially or temporally limited. Unless constrained or bounded by statute, regulation, or an approved land use plan decision, legal activities involving public enjoyment and use of the public lands (e.g., hiking, camping, hunting, etc.) require no formal BLM authorization.

Authorized Officer: Any employee of the BLM to whom authority has been delegated to perform the duties described.

Available Lands (Oil and Gas): Any lands subject to oil and gas leasing under the Minerals Leasing Act.

Avoid: To circumvent, or bypass, an impact altogether by not taking a certain action, or parts or an action. Therefore, the term "avoid" does not necessarily prohibit a proposed activity, but it may require the relocation of an action, or the total redesign of an action to eliminate any potential impacts resulting from it.

Avoidance/Avoidance Area: These terms usually address mitigation of some activity (i.e., resource use). Paraphrasing the CEQ Regulations (40 CFR 1508.20), avoidance means to circumvent, or bypass, an impact altogether by not taking a certain action, or parts of an action. Therefore, the term "avoidance" does not necessarily prohibit a proposed activity, but it may require the relocation of an action, or the total redesign of an action to eliminate any potential impacts resulting from it.

Avoidance Mitigation: Avoiding the impact altogether by not taking a certain action or parts of an action (40 CFR 1508.20(a)) (e.g., may also include avoiding the impact by moving the proposed action to a different time or location).

Baseline: The pre-existing condition of a defined area and/or resource that can be quantified by an appropriate metric(s). During environmental reviews, the baseline is considered the affected environment that exists at the time of the review's initiation, and is used to compare predictions of the effects of the proposed action or a reasonable range of alternatives.

Baseline Population Levels (sage-grouse populations): Established by pre-disturbance surveys, reference surveys, and accounting for regional and statewide trends in population levels. Population counts in Wyoming are maintained by the Wyoming Game and Fish Department (WGFD). Estimates of population are determined based upon survey protocols determined by the WGFD, and are implemented consistently throughout the state. Population counts are tracked for individual leks and then calculated for each core area (PHMA).

Best Management Practices (BMPs): A suite of techniques that guide or may be applied to management actions to aide in achieving desired outcomes. BMPs are often developed in conjunction with land use plans, but they are not considered a planning decision unless the plans specify that they are mandatory. BMPs may be updated or modified without a plan amendment (BLM Manual Handbook H-1601-1).

Big Game: Large species of wildlife that are hunted, such as elk, deer, bighorn sheep, moose, and pronghorn.

Biological Assessment (BA): The gathering and evaluation of information on proposed endangered and threatened species and critical habitat and proposed critical habitat. Required when a management action potentially conflicts with endangered or threatened species, the BA is the way federal agencies enter into formal consultation with the U.S. Fish and Wildlife Service and describe a proposed action and the consequences to the species from the action.

Biological Diversity: The variety of life forms and processes within an area. Included in the consideration of diversity are the complexities of genetic variation, number and distribution of species, and the ways in which the variety of biologic communities interact and function.

Biologically Significant Unit: A geographical/spatial area within GRSG habitat that contains relevant and important habitats that is used as the basis for comparative calculations to support evaluation of changes to habitat. A biologically significant unit or subset of the unit is used in the calculation of the anthropogenic disturbance threshold and in the adaptive management habitat trigger.

Biotic: All the natural living organisms in a planning area and their life processes.

Candidate Species: Any species included in the *Federal Register* notice of review that are being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

Canopy: The uppermost layer consisting of the crowns of trees or shrubs in a forest or woodland.

Casual Use: Casual use means activities ordinarily resulting in no or negligible disturbance of the public lands, resources, or improvements for example, activities that do not involve the use of mechanized earth-moving equipment or explosives or, in areas designated as closed to OHVs, do not involve the use of motorized vehicles. This can also be activities occurring by chance or taking place at irregular intervals without ceremony or formality. For examples for rights of ways see 43 CFR 2801.5.The definition related to 3809-surface management of locatable minerals is found at 43 CFR 3809.5. Other activities which do not unduly disturb surface resources. If, however, the authorized officer determines that appreciable impacts to surface resources may occur, he/she may require the potential applicant to obtain a land use authorization permit with appropriate terms and conditions under the provision of part 2920 of this title.

Catastrophic Fire: A fire that has significant negative impacts on the health and productivity of ecosystems and other human values.

Channel: An open conduit either naturally or artificially created that periodically or continuously transports moving water (and, in natural systems, also transports sediment, nutrients, and woody material) or forms a connecting link between two bodies of water.

Checkerboard: This term refers to a land ownership pattern of alternating sections of Federal owned lands with private or State owned lands for 20 miles on either side of a land grant railroad (e.g. Union Pacific, Northern Pacific, etc.). On land status maps this alternating ownership is either delineated by color coding or alphabetic code resulting in a "checkerboard" visual pattern.

Cherry-stemmed/Cherry-stemming: This term refers to a narrow, linear, intrusion or extrusion of a delineated block of Federal lands resulting in what appears on a map as a boundary inlet or peninsula. Although this term may be used in any resource program, the most common use is in relation to dead-end road intrusions along WSA boundaries.

Closed: Generally denotes that an area is not available for a particular use or uses; refer to specific definitions found in law, regulations, or policy guidance for application to individual programs.

Closed Area or Trail: Designated areas and trails where the use of off-road vehicles is permanently or temporarily prohibited. The use of off-road vehicles in closed areas may be allowed only with the approval of the authorized officer.

"Closed" Designation (OHV): Under this designation, vehicle travel is prohibited yearlong with no exceptions other than for emergency vehicles in emergency situations. Access by means other than motorized vehicles is permitted.

Closed Road: A road or segment of road that is restricted from certain types of use during certain seasons of the year. The prohibited use and the time period of closure are specified.

Code of Federal Regulations (CFR): The official, legal tabulation or regulations directing Federal Government activities.

Collaboration: Working together, sometimes with individuals or groups of opposing points a view, to reach a common agreement.

Co-locate: Installation of new linear improvements (e.g., equipment or facilities) on or within existing linear improvements.

Commercial Forestland: Forestland that is now producing or is capable of producing at least 20 cubic feet of wood fiber per acre per year from commercial coniferous tree species and that has met certain economic, environmental, or multiple use criteria for inclusion in the commercial forestland base.

Commodity: An economic good such as a product of agriculture or mining.

Common Variety Minerals: Category of minerals including varieties of sand, gravel, stone, pumicite, cinders, pumice (except that occurring in pieces over 2 inches on a side), clay, and petrified wood; authorized under the 1947 Materials Act and the 1955 Multiple Surface Use Act for sale as "salable minerals."

Communication Tower Site: A site that includes broadcast types of uses (e.g., television, AM/FM radio, cable television, broadcast translator) and non-broadcast uses (e.g., commercial or private mobile radio service, cellular telephone, microwave, local exchange network, passive reflector).

Community: An assemblage of plant, animal, and/or human populations in a common spatial arrangement.

Compensatory Mitigation: Compensating for the (residual) impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

Compensatory Mitigation Projects: Specific, on-the-ground actions to improve and/or protect habitats (e.g., chemical vegetation treatments, land acquisitions, conservation easements).

Compensatory Mitigation Sites: The durable areas where compensatory mitigation projects will occur.

Condition of Approval: Condition or provision (requirement) under which an application for a permit to drill or sundry notice is approved.

Conformance: That a proposed action shall be specifically provided for in the land use plan or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved land use plan.

Connectivity: Condition in which the spatial arrangement of land cover types allows organisms and ecological processes (such as disturbance) to move across the landscape. Connectivity is the opposite of fragmentation.

Connectivity Habitat or Areas: Sage-grouse connectivity habitat (as defined in the WY EO 2015-4) is one of two components of Priority Habitat Management Areas. Connectivity habitats are state-designated areas identified as the most important for GRSG and include known, migration or connectivity corridors. It does not include breeding, late brood-rearing, or winter concentration areas. Sage-grouse core habitat plus connectivity habitat together make up sage-grouse priority habitat.

Conservation Plan: The recorded decisions of a landowner or operator, cooperating with a conservation district, on how the landowner or operator plans, within practical limits, to use his/her land according to its capability and to treat it according to its needs for maintenance or improvement of the soil, water, animal, plant, and air resources.

Conservation Measures: Measures to protect, enhance, and/or restore GRSG habitat by reducing, eliminating, or minimizing threats to that habitat. Conservation measures for GRSG will be developed in collaboration with the State of Wyoming and other applicable stakeholders.

Consistency: The proposed land use plan does not conflict with officially approved plans, programs, and policies of tribes, other federal agencies, and state, and local governments to the extent practical within Federal law, regulation, and policy.

Controlled Surface Use (CSU): A category of moderate constraint stipulations that allows some use and occupancy of public land while protecting identified resources or values and is applicable to fluid mineral leasing and all activities associated with fluid mineral leasing. The stipulation identifies the location protected, activities prohibited or restricted, and the resources protected. The extent of protection may range from a limited area for only one activity to all uses. Typically used in use authorizations. For the protected resource, some activities may be prohibited while others are allowed. Activities may be allowed but only under certain conditions. Examples include (1) seismic operations are prohibited within a certain distance of an unstable resource (i.e., historic structure) and (2) only tracked construction vehicles are allowed access to the site (see also Stipulation Category).

Core Habitat: Sage-grouse core habitat (as defined in the WY EO 2015-4) is one of two components of Sage-grouse Priority Habitat Management Areas. Core habitats are state-designated areas identified as the most important for GRSG and include breeding, late brood-rearing, winter concentration areas. It does not include known, migration or connectivity corridors. Sage-grouse core habitat plus connectivity habitat together make up Sage-grouse Priority Habitat Management Areas.

Corridor: A linear strip of land which has ecological, technical, economic, social, or similar advantages over other areas for the present or future location of transportation or utility rights-of-way within its boundaries.

Council On Environmental Quality (CEQ): An advisory council to the President of the United States established by the national Environmental Policy Act of 1969. It reviews federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

Cover: Cover is any part of an animal's environment that provides protection and enhances the survival or reproduction of the animal. Wildlife cover has 2 components:

- It provides shelter from adverse weather conditions (winter or thermal cover), and
- It provides protection from predators (screening or escape cover) (Yarrow 2009).

Critical Habitat: An area occupied by a threatened or endangered species "on which are found those physical and biological features (1) essential to the conservation of the species, and (2) which may require special management considerations or protection." These irreplaceable and vital areas are designated as critical by the Secretary of the Interior for the survival and recovery of listed threatened and endangered species.

Crucial Habitat: Any particular range or habitat component that directly limits a community, population, or subpopulation to reproduce, and maintain itself at a certain level over the long term.

Crucial Winter Range: The portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover. Any portion of winter range that is the determining factor in a population's ability to maintain and reproduce itself at a certain level over the long term may be crucial winter range.

Cultural Heritage Resource: A fragile and nonrenewable remnant of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, or natural features.

Cultural Resource Inventory: A descriptive listing and documentation, including photographs and maps, of cultural resources. Processes involved are locating, identifying, and recording of sites, structures, buildings, objects, and districts through library and archival research; collecting information from persons knowledgeable about cultural resources; and conducting on-the-ground field surveys of varying levels of intensity. (See also Cultural Resource Inventory Classes.)

Cultural Resource Inventory Classes: A class I inventory is a professionally prepared study that includes a compilation and analysis of all reasonably available cultural resource data and literature, and a management-focused, interpretive, narrative overview, and synthesis of the data. The overview also defines regional research questions and treatment options

A class II probabilistic field survey is a statistically based sample survey, designed to aid in characterizing the probable density, diversity, and distribution of cultural properties in an area, to develop and test predictive models, and to answer certain kinds of research questions. Within individual sample units, survey aims, methods, and intensity are the same as those applied in class III survey.

Class III intensive survey describes the distribution of properties in an area; determines the number, location and condition of properties; determines the types of properties actually present within the area; permits classification of individual properties; and records the physical extent of specific properties.

Cultural Resource Site (cultural property): A physical location of past human activities or events. Cultural properties are extremely variable in size, ranging from the location of a single cultural resource feature to a cluster of cultural resource structures with associated objects.

Cumulative Impact (Effect): The impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Deferred/Deferred Use: To set-aside, or postpone, a particular resource use(s) or activity(ies) on the public lands to a later time. Generally when this term is used the period of the deferral is specified. Deferments sometimes follow the sequence timeframe of associated serial actions (e.g., action B will be deferred until action A is completed, etc.).

Designated Roads and Trails: Those roads and trails that are specifically identified by the BLM as the only allowable routes for motor vehicle travel in the specific area involved. Travel on designated roads and trails may be allowed seasonally or yearlong. Additional roads or trails may be constructed and authorized for travel as need dictates in conformance with the land use plan or activity plan.

Desired Condition: Alluvial stream channels (i.e., those not formed in bedrock) are considered to be physically functioning properly when they can adjust their form and gradient, over a period of time, to transport the water, wood, and sediment being delivered to them. They are resilient to disturbance. Channel cross-section form is generally maintained, even with lateral migration of the channel, or is moving toward

a form that allows for improved channel function. Instream levels of fine sediment are within a natural range except for short periods of time after disturbance. Stream bank stability reflects stream type and potential.

Desired Future Condition: A future land or resource condition that achieves a set of compatible multi-resource goals and objectives.

Desired Plant Community: The vegetation community that provides the vegetation attributes required for meeting or exceeding RMP vegetation objectives. The desired vegetation community must be within an ecological site's capability to produce these attributes through natural succession, management action, or both (BLM Wyoming Instruction Memorandum 91-290, May 29, 1991).

Destroyed Lek: A formerly active lek site and surrounding sagebrush habitat that has been destroyed and is no longer suitable for sage-grouse breeding. A lek site that has been strip-mined, paved, converted to cropland or undergone other long-term habitat type conversion is considered destroyed.

Developed Recreation: Recreation that requires facilities, resulting in concentrated use of an area. An example of a developed recreational site is a campground. Facilities might include roads, parking lots, picnic tables, restrooms, drinking water, and buildings.

Development: Active drilling and production of wells.

Development Area: Areas primarily leased with active drilling and wells capable of production in payable quantities.

Direct Control: This is associated with urban development and high value areas and is defined as the immediate and complete extinguishments of a wildfire. Direct control also includes exposure protection in which critical resources, such as houses, are shielded from the fire.

Direct Impacts (Effects): Direct impacts are caused by the action and occur at the same time and place.

Directional Drilling (Oil and Gas): Drilling boreholes with the directional course of the hole planned before drilling. Such holes are usually drilled with rotary equipment at an angle to the vertical and are useful in avoiding obstacles or in reaching side areas or the mineral estate beneath a restricted surface.

Discharge (Water): The rate of flow or volume of water flowing in a stream at a given place or within a given period of time.

Discovery: The knowledge of the presence of valuable minerals within or close enough to a location to justify a reasonable belief in their existence. Discovery is extremely important to public lands mining because the Mining Law of 1872 provides that mining claims can be located only after a discovery is made.

Dispersal: The movement, usually one way and on any time scale, of plants or animals from their point of origin to another location where they subsequently produce offspring.

Dispersed Recreation: Recreational use outside developed recreational sites. This includes activities such as scenic driving, hiking, bicycling, backpacking, hunting, fishing, snowmobiling, horseback riding, cross-country skiing, and recreation in primitive environments.

Disposal: Transfer of ownership of a tract of public land from the United States to another party through sale, exchange, or transfer under the Recreation and Public Purposes Act, Small Tracts Act, Bankhead-Jones Farm Tenant Act, General Exchange Act or other appropriate authorities.

Disruptive Activities: Land resource uses/activities that are likely to alter the behavior, displace, or cause excessive stress to existing animal or human populations occurring at a specific location and/or time. In this

context, disruptive activity/activities refers to those actions that alter behavior or cause the displacement of individuals such that reproductive success is negatively affected, or an individual's physiological ability to cope with environmental stress is compromised. This term does not apply to the physical disturbance of the land surface, vegetation, or features. When administered as a land use restriction (e.g., No Disruptive Activities), this term may prohibit or limit the physical presence of sound above ambient levels, light beyond background levels, and/or the nearness of people and their activities. The term is commonly used in conjunction with protecting wildlife during crucial life stages (e.g., breeding, nesting, birthing, etc.), although it could apply to any resource value on the public lands. The use of this land use restriction is not intended to prohibit all activity or authorized uses. For actions other than those taken for human health and safety, regulatory compliance or emergency, an activity is "disruptive" if the activity would require people and/or the structure or activity to be present in these habitats for a duration of more than 1 hour during any one 24-hour period during the applicable season in the site-specific area.

Distribution Line: An electrical utility line with a capacity of less than 100kV or a natural gas, hydrogen, or water pipeline less than 24" in diameter.

Disturbance: A discrete event, either natural or human induced, that causes a change in the existing condition of an ecological system.

Diurnal: Describes a cyclic event recurring daily; or the nature or habit of an organism to be active during daylight hours.

Diversity: The distribution and relative abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

Documented Lek: Any lek that has been identified as active, inactive, unknown, or occupied.

Drainage (Oil and Gas): 1) Drainage occurs when oil and gas migrates in the subsurface from areas of high pressure to areas of lower pressure, such as is found near a producing well. 2) Production of migrated oil and gas without compensation to the owner and/or lessee from whose estate the hydrocarbons moved is called drainage.

Durability (Protective and Ecological): The administrative, legal, and financial assurances that secure and protect the conservation status of a compensatory mitigation site, and the ecological benefits of a compensatory mitigation project, for at least as long as the associated impacts persist (BLM Manual Section 1794).

Easement: A right held by a person or agency to make limited use of another's real property for access or other purposes.

Ecological Site: A kind of land with a specific potential natural community and specific physical site characteristics, differing from other kinds of land in that the site has the ability to produce distinctive kinds and amounts of vegetation and to respond to management. Ecological sites are defined and described with information about soil, species composition, and annual production.

Ecological Site Descriptions (ESDs): Are reports that provide detailed information about a particular kind of land - a distinctive Ecological Site. ESDs provide land managers the information needed for evaluating the land as to suitability for various land-uses, capability to respond to different management activities or disturbance processes, and ability to sustain productivity over the long term. ESD information is presented in four major sections: 1) Site Characteristics - physiographic, climate, soil, and water features; 2) Plant Communities – plant species, vegetation states, and ecological dynamics; 3) Site Interpretations – management alternatives for the site and its related resources; 4) Supporting Information – relevant literature, information and data sources.

Ecosystem: A complete, interacting system of living organisms and the land and water that make up their environment; the home places of all living things, including humans.

Emergency Use: These are activities occurring on the public lands outside the scope of normal resource use and operations, and which require immediate attention. Emergency use activities are typically driven by imminent concerns for human health and safety, or protection of property (e.g., wildfire suppression, HAZMAT response, disease outbreaks, etc.). Emergency use is typically exempted from other land use restrictions, with the exercise of reasonable and prudent care.

Endangered Species: Any plant or animal species that is in danger of extinction throughout all or a significant portion of its range, as defined by the U.S. Fish and Wildlife Service under the authority of the Endangered Species Act of 1973.

Enhance: The improvement of habitat by increasing missing or modifying unsatisfactory components and/or attributes of the plant community to meet sage-grouse objectives.

Environmental Assessment (EA): Concise, analytical documents, authorized by the National Environmental Policy Act (NEPA) of 1969, that are prepared with public participation to determine whether an Environmental Impact Statement (EIS) is needed for a particular project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements.

Environmental Impact Statement (EIS): A document required by the National Environmental Policy Act (NEPA) for certain actions "significantly affecting the quality of the human environment." An EIS is a tool for decision making. It describes the positive and negative environmental effects of a proposed action, and it usually also lists one or more alternative actions that may be chosen instead of the action described in the EIS.

Ephemeral Channels/Streams: A defined channel formed in response to ephemeral surface flow conditions. Defined channels typically can be identified by an abrupt bank along a water flow path with evidence of scouring, sorting, and/or vegetation removal during flood events. These channels generally form in concave erosional features such as gullies, ravines, swales, etc. These channels are above the water table at all times, and lose water to the groundwater system.

Ephemeral Surface Waters: Streams, lakes, or other surface water bodies that have open water *only* during or immediately after periods of rainfall or snowmelt. These water bodies are above the water table at all times, and lose water to the groundwater system.

Erosion: The wearing away of the land surface by running water, wind, ice, or other geological agents.

Essential Nexus: The degree of the actions demanded by the permit conditions bears the required relationship to the projected impact of the proposed development.

Evaporation Pond: An industrial containment area designed to allow briny water to evaporate by using solar energy and wind.

Exception: A one-time exemption for a particular site within the leasehold; exceptions are determined on a case-by-case basis; the stipulation continues to apply to all other sites within the leasehold. An exception is a limited type of waiver (H-1624-1 – Planning for Fluid Mineral Resources).

Exclusion Areas: An area on the public lands where a certain activity(ies) is prohibited to insure protection of other resource values present on the site. The term is frequently used in reference to lands/realty actions and proposals (e.g., rights-of-way, etc.), but is not unique to lands and realty program activities. This restriction is functionally analogous to the phrase "no surface occupancy" used by the oil and gas program,

and is applied as an absolute condition to those affected activities. The less restrictive analogous term is avoidance area.

Exotic Species: Species which occur in a given place, area, or region as the result of direct or indirect, deliberate or accidental introduction of the species by humans, and for which introduction has permitted the species to cross a natural barrier to dispersal.

Exploration: Active drilling and geophysical operations to:

a. Determine the presence of the mineral resource; or

b. Determine the extent of the reservoir or mineral deposit.

Extensive Recreation Management Area (ERMA): BLM administrative units where recreation management is only one of several management objectives and where limited commitment of resources is required to provide extensive and unstructured types of recreation activities. These areas consist of the remainder of land areas not included in Special Recreation Management Areas (SRMA).

Facility, Energy and Mining: Human constructed assets designed and created to serve a particular function and to afford a particular convenience or service that is affixed to a specific location, such as oil and gas well pads and associated infrastructure.

Feasible: Something is capable of being accomplished.

Federal Lands: As used in this document, lands owned by the United States, without reference to how the lands were acquired or what federal agency administers the lands. The term includes mineral estates or coal estates underlying private surface but excludes lands held by the United States in trust for Indians, Aleuts, or Eskimos. (See also Public Land.)

Federal Land Policy and Management Act of 1976 (FLPMA): Public Law 94-579. October 21, 1976, often referred to as the BLM' s "Organic Act," which provides the majority of the BLM's legislated authority, direction, policy, and basic management guidance.

Federal Register (FR): A daily publication that reports Presidential and federal agency documents.

Fire Management: The integration of knowledge of fire protection, prescribed fire, and fire ecology into multiple use planning, decisionmaking, and land management activities. Fire management places fire in perspective within the context of overall land management objectives.

Fire Management Plan (FMP): A strategic plan that defines a program to manage wildland and prescribed fires and documents the fire management program in the approved land use plan. The plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

Fire Regime Condition Class: A measure describing the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects or disease, or other management activities. The fire regime condition classes defined as follows:

- **Condition Class 1:** Fire regimes are within a historical range, and the risk of losing key ecosystem components from fire is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.

- **Condition Class 2:** Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components from fire is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, frequency, intensity, severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.
- **Condition Class 3:** Fire regimes have been significantly altered from their historical ranges. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, frequency, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

Fire Suppression: All work and activities associated with fire-extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

Fishery: Habitat that supports the propagation and maintenance of fish.

Flight Distance (Displacement Distance): That to which a person can approach a wild animal without causing it to flee.

Floodplain: The relatively flat area or lowlands adjoining river channel constructed by the river in the present climate and overflowed at times of high discharge.

Flow Connected Surface Feature: A surface waterbody, including, but not limited to, a river, stream, lake, or pond, whose water is hydrologically connected to surface or groundwater.

Fluid Minerals: Oil, gas, coalbed natural gas, and geothermal resources.

Forage: All browse and herbaceous foods available to grazing animals that may be grazed or harvested for feeding.

Forage Reserve: A determination for an allotment, or a portion of an allotment, on which there is no current term permit obligation for some or all of the estimated livestock grazing capacity and where it has been determined to use the available forage for management flexibility when there is a loss of forage availability on other allotments because of factors such as drought, hail, or fire (either prescribed or wild).

Forest Crown Cover: The proportion of forested land area covered by tree crowns.

Forest Management: The practical application of scientific, economic, and social principals to the administration and working of a forest for specified objectives.

Forest Resource: A community of one or more forest tree species in varying stages of ecological succession that constitutes the primary dominant life form by which certain understory plants and forest dwelling animals are associated, and in whole or part, dependent (Schiche 2003).

Formation Fracturing: See Hydraulic Fracturing.

Frac: See Hydraulic Fracturing.

Fuelwood: Wood that is round, split, or sawn and/or otherwise generally refuse material cut into short lengths or chipped for burning.

Full Suppression: A fire suppression strategy requiring immediate and continuous aggressive attack to attain the suppression objectives with the least damage to property or loss of resources in the most cost-effective

manner possible. Such actions may include control, containment, or confinement of wildfire to attain land management objectives.

Furbearing Animal: Badger, beaver, bobcat, marten, mink, muskrat, and weasel.

Game Birds: Grouse, partridge, pheasant, ptarmigan, quail, wild turkey, and migratory game birds.

Geophysical Operation: Prospecting for minerals or mineral fuels by measuring the various physical properties of the rocks and interpreting the results in terms of geologic features or the economic deposits sought. Physical measurements are taken at the surface, concerning the differences in the density, electrical resistance, or magnetic properties of the rocks. There are four main methods employed in geophysical prospecting: gravitational, magnetic, electrical, and seismic, with several modifications of each.

General Habitat Management Areas: Occupied (seasonal or year-round) habitat outside of priority habitat. These areas have been identified by the BLM in coordination with respective state wildlife agencies.

Goal: A broad statement of a desired outcome. Goals are usually not quantifiable and may not have established time frames for achievement.

Grazing Preference: Grazing preference means a superior or priority position against others for the purpose of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by the permittee or lessee (43 CFR 4100.0-5).

Grazing Relinquishment: The voluntary and permanent surrender by an existing permittee or lessee, (with concurrence of any base property lienholder(s)), of their priority (preference) to use livestock forage allocation on public land as well as their permission to use this forage. Relinquishments do not require the consent or approval by the BLM. The BLM's receipt of a relinquishment is not a decision to close areas to livestock grazing.

Grazing System: Scheduled grazing use and non-use of an allotment to reach identified goals or objectives by improving the quality and quantity of vegetation. Include, but are not limited to, developing pastures, utilization levels, grazing rotations, timing and duration of use periods, and necessary range improvements.

Guidelines (BLM): Actions or management practices that may be used to achieve desired outcomes, sometimes expressed as best management practices. Guidelines may be identified during the land use planning process, but they are not considered a land use plan decision unless the plan specifies that they are mandatory. Guidelines for grazing administration must conform to 43 CFR 4180.2 (H-1601-1, Land Use Planning Handbook).

Habitat: An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle. In wildlife management, the major components of habitat are food, water, cover and the adequate juxtaposition of the three.

Habitat Destruction (Loss/Conversion): The ultimate form of a habitat impact. The destruction of a natural ecosystem through its conversion to another land use. In each conversion, the original natural characteristics of the land are eliminated, while the associated habitat values are modified to varying degrees.

Habitat Fragmentation (Breakdown Partitioning): A form of habitat impact which often only destroys part of a habitat, leaving other portions of the habitat intact. Depending on the scale of concern, many instances of local habitat destruction are better thought of as habitat fragmentation, or partitioning. Such fragmentation can be the principal cause of loss of "area-sensitive" species (e.g., grizzly bears, sage-grouse, etc.), and is the most serious threat to biological diversity.

Habitat Management Plan (HMP): An officially approved activity plan for a specific geographic area of public land. An HMP identifies wildlife habitat and related objectives, defines the sequence of actions to be implemented to achieve the objectives, and outlines procedures for evaluating accomplishments.

Habitat Type: Place where an animal or plant normally lives, often characterized by a dominant plant form or physical characteristic.

Hazard Reduction: Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread.

Hazardous Fuels: Excessive live or dead wildland fuel accumulations that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.

Healthy Stream Channel Form and Function: Stream channel function includes both physical and biological attributes, and applies to intermittent and perennial water bodies. Function includes water transport, sediment transport, and transport of wood and chemicals (including nutrients) delivered to streams. Physical attributes of streams include landscape setting, cross-section form, longitudinal gradient, particle size distribution, and response/adjustment to disturbance. Biological attributes of streams include nutrient dynamics, biological productivity, and aquatic habitat characteristics.

Herbaceous: Pertaining to or characteristic of an herb (fleshy-stem plant) as distinguished from the woody tissue of shrubs and trees.

Herd Area: The geographic area identified as having been used by a herd as its habitat in 1971.

Herd Management Area (HMA): Herd Management Areas shall be established for the maintenance of wild horse and burro herds. In delineating each herd management area, the authorized officer shall consider the appropriate management level for the herd, the habitat requirements of the animals, the relationships with other uses of the public and adjacent private lands, and the constraints contained in CFR 4710.4."

Hibernaculum: A shelter occupied during the winter by a dormant animal.

High-voltage Transmission Line: An electrical power line that is 100 kilovolts or larger.

Historic: Referring to the time after written records or after the Europeans first came and wrote about the people and events in America.

Historical Lek: (Former term for "unoccupied lek".) There are two types of unoccupied leks, "destroyed" or "abandoned." Management protection will not be afforded to unoccupied leks.

Historical Raptor Nests: Any raptor nest or site that has been destroyed but was historically recorded and documented. Temporal and spatial stipulations will not apply.

Home Range: The area in which an animal travels in the scope of natural activities.

Holder: An individual or entity that holds a valid special use authorization.

Hydraulic Fracturing: The breaking or parting of reservoir rock through the use of injected fluids. Hydraulic fracturing is a method of stimulating production or injection at a specific depth in a formation of low permeability by inducing fractures and fissures in the formation by applying high fluid pressure to its face. Fluids (liquids, gases, foams, and emulsions) are injected into reservoir rock at pressures that exceed the strength of the rock and overcome internal stresses of the rock. The fluid enters the formation and parts or fractures it. Sand grains, aluminum pellets, glass beads, or similar materials are carried in suspension by the

fluid into the fractures. These are called propping agents or proppants. When the pressure is released at the surface, the fracturing fluid returns to the wellbore as the fractures partially close on the proppants, leaving paths with increased permeability for fluid flow.

Identified 100-Year Flood Plains: Those areas delineated by the Federal Emergency Management Agency as having a 1 percent probability of being inundated in any given year.

Impacts (or Effects): Consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative.

Implementation Plan: A site-specific plan written to implement decisions made in a land use plan. An implementation plan usually selects and applies best management practices to meet land use plan objectives. Implementation plans are synonymous with "activity" plans. Examples of implementation plans include interdisciplinary management plans, habitat management plans, and allotment management plans.

Important Habitats: Areas of especially high value for a diversity of wildlife or areas that provide certain habitat elements essential to the existence of certain groups of wildlife.

Inactive Lek: Any lek where sufficient data suggests that there was no strutting activity throughout a strutting season. Absence of strutting grouse during a single visit is insufficient documentation to establish that a lek is inactive. This designation requires documentation of either: 1) an absence of sage-grouses on the lek during at least two ground surveys separated by at least seven days. These surveys must be conducted under ideal conditions (April 1-May 7 (or other appropriate date based on local conditions), no precipitation, light or no wind, half-hour before sunrise to one hour after sunrise) or 2) a ground check of the exact known lek site late in the strutting season (after April 15) that fails to find any sign (tracks, droppings, feathers) of strutting activity. Data collected by aerial surveys should not be used to designate inactive status as the aerial survey may actually disrupt activities.

Indicators: Factors that describe resource condition and change and can help the BLM determine trends over time.

Indicator Species: Species that indicate the presence of certain environmental conditions, seral stages, or previous treatment. One or more plant species selected to indicate a certain level of grazing use (See Management Indicator Species).

Indirect Impacts (Effects): Indirect impacts are caused by the action and occur later in time or further removed in distance.

Infiltration Pond: An industrial containment area designed to allow groundwater recharge and the downward entry of water into the soil or other material. Infiltration impoundments constructed in-channel may allow for overflow under given storm events.

Initial Attack: The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire.

In-kind Mitigation: The replacement or substitution of resources or values that are of the same type and kind as those impacted.

Integrated Ranch Planning: A method for ranch planning that takes a holistic look at all elements of the ranching operations, including strategic and tactical planning, rather than approaching planning as several separate enterprises.

Intensive Management: Use of proper distance restrictions, seasonal or timing restrictions, rehabilitation standards, and the application of the Wyoming Mitigation Guidelines for Surface-disturbing and Disruptive Activities to adequately protect the resources for which the intensive management is applied. Intensive management actions would be applied with the goal of maintaining or enhancing sensitive resources (plant communities, wildlife habitats, archeological or paleontological resources, etc.).

Interdisciplinary Team: A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights on any stage of the problem, and disciplines may combine to provide new solutions. The number and disciplines of the members preparing the plan vary with circumstances. A member may represent one or more discipline or program interest.

Interior Board of Land Appeals (IBLA): The Department of the Interior, Office of Hearings and Appeals, board that acts for the Secretary of the Interior in responding to appeals of decisions on the use and disposition of public lands and resources. Because the IBLA acts for and on behalf of the Secretary of the Interior, its decisions usually represent the Department's final decision but are subject to the courts.

Intermittent Surface Waters: Streams, lakes, or other surface water bodies that generally flow or contain during a portion of the year when they receive water from springs or during runoff from rain or snow. In the case of streams, this term can also refer to spatially noncontinuous flow because of groundwater interaction (i.e., portions of the stream are generally dry and portions are generally wet in most years).

Invasive Species (Invasive Plant Species, Invasives): An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. The species must cause, or be likely to cause, harm, and be exotic to the ecosystem it has infested before considered invasive.

Irreversible and Irretrievable Commitment of Resources: An irretrievable commitment of a resource is one in which the resource or its use is lost for a period of time. An irreversible commitment of a resource is one that cannot be reversed. NEPA §102(2)C requires a discussion of any irreversible or irretrievable commitments of resources that would be involved in a proposal should it be implemented.

Isolated Parcel: An individual parcel of land that may share a corner, but does not have a common border with another parcel.

Jurisdiction: The legal right to control or regulate use of a transportation facility. Jurisdiction requires authority but not necessarily ownership.

Land Locked: This term refers to the situation when any parcel of land (i.e., private, State, or Federal) has no legal access without crossing another ownership due to the existing land ownership pattern.

Landscape: A distinct association of land types that exhibit a unique combination of local climate, landform, topography, geomorphic process, surficial geology, soil, biota, and human influences. Landscapes are generally of a size that the eye can comprehend in a single view.

Land Tenure Adjustment(s) (BLM): This term refers to a change in land ownership patterns, or legal status, to improve their administrative manageability and/or their usefulness to the public.

Land Use Plan: A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of land-use-plan-level decisions developed through the planning process, regardless of the scale at which the decisions were developed.

Large Scale Anthropogenic Disturbances: Features include but are not limited to paved highways, graded gravel roads, transmission lines, substations, wind turbines, oil and gas wells, geothermal wells and associated facilities, pipelines, landfills, agricultural conversion, homes, and mines.

Late Brood Rearing Area: Habitat includes mesic sagebrush and mixed shrub communities, wet meadows, and riparian habitats as well as some agricultural lands (e.g. alfalfa fields, etc.).

Leasable Minerals: Those minerals or materials designated as leasable under the Mineral Leasing Act of 1920, as amended. These include energy-related mineral resources such as oil, natural gas, coal, and geothermal, and some non-energy minerals, such as phosphate, sodium, potassium, and sulfur. Geothermal resources are also leasable under the Geothermal Steam Act of 1970.

Lease: Section 302 of the Federal Land Policy and Management Act of 1976 provides the BLM's authority to issue leases for the use, occupancy, and development of public lands. Leases are issued for purposes such as a commercial filming, advertising displays, commercial or noncommercial croplands, apiaries, livestock holding or feeding areas not related to grazing permits and leases, native or introduced species harvesting, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, ski resorts, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and non-irrigation facilities. The regulations establishing procedures for processing these leases and permits are found in 43 CFR 2920.

Lease Notice: Provides more detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders.

Lease Stipulations (Oil and Gas): Additional specific terms and conditions that modify the lease rights or change the manner in which an operation may be conducted.

Lek: A traditional courtship display area attended by male GRSG in or adjacent to sagebrush dominated habitat. A lek is designated based on observations of two or more male sage-grouse engaged in courtship displays. For management purposes, leks with less than five males observed strutting should be confirmed active for two years to meet the definition of a lek (Connelly et al 2000, Connelly et al. 2003, 2004).

Lek Complex: A lek or group of leks within 2.5 km (1.5 mi) of each other between which male sage-grouse may interchange from one day to the next. Fidelity to leks has been well documented. Visits to multiple leks are most common among yearlings and less frequent for adult males, suggesting an age-related period of establishment (Connelly et al. 2004).

Lek Count: A census technique that documents the actual number of male sage-grouse observed attending a lek complex.

Lek Management Status: Based on its annual status, a lek is assigned to one of the following categories for management purposes (BLM 2012):

- Occupied lek – A lek that has been active during at least one strutting season within the prior ten years. Occupied leks are protected through prescribed management actions during surface disturbing activities.
- Unoccupied lek – There are two types of unoccupied leks, "destroyed" and "abandoned." Unoccupied leks are not protected during surface disturbing activities.
- Abandoned lek – A lek in otherwise suitable habitat that has not been active during a period of 10 consecutive years. To be designated abandoned, a lek must be "inactive" (see Lek Annual Status) in at least four non-consecutive strutting seasons spanning the ten years. The site of an "abandoned" lek should

be surveyed at least once every ten years to determine whether it has been re-occupied by Greater Sage-Grouse.

- Undetermined lek – Any lek that has not been documented active in the last ten years, but survey information is insufficient to designate the lek as unoccupied. Undetermined leks are not protected through prescribed management actions during surface disturbing activities until sufficient documentation is obtained to confirm the lek is occupied. Use of this status should be rare (see Lek Annual Status).

Lek Perimeter: The outer perimeter of a lek and any associated satellites. Perimeters should be mapped by experienced observers using established protocols for all leks with larger leks receiving higher priority. Perimeters may vary over time as population levels or habitat and weather conditions change. However, changes to mapped perimeters should occur infrequently and only if grouse use consistently (2+ years) demonstrates the existing perimeter to be inaccurate.

Lek Survey: Where lek counts are not feasible, surveys are the only reliable means to monitor population trends. Lek surveys are designed principally to determine whether leks are active or inactive, requiring as few as one visit to a lek. Obtaining accurate counts of the numbers of males attending is not essential. Lek surveys involve substantially less effort and time than lek counts. They can also be done from a fixed-wing aircraft or helicopter. Lek surveys can be conducted from the initiation of strutting in early March until early-mid May, depending on the site and spring weather.

Lentic: Wetland or riparian areas with standing water habitat such as lakes, ponds, seeps, bogs, and meadows.

Lessee: A person or entity authorized to use and occupy land under a specific instrument identified as a lease. Leases are also used for certain mineral leasable activities.

Level of Acceptable Change: Federally established threshold of acceptable change to maintain conditions of acid-sensitive lakes.

Level of Concern: Federally established atmospheric deposition threshold concentration amount related to undesirable effects on the ecosystem.

Light Grazing: Light grazing is related to forage utilization, and can be expressed as livestock grazing that consumes no more than about 30% of the current year's growth of forage plants. Light refers to the effect on the landscape, which is measured through utilization monitoring. You may reduce the number of animals by 30% and still not achieve "light grazing", if those animals that remain consume more than 30% of the current year's forage growth.

Limited Designation (OHV): Vehicle travel is restricted in some manner in the area. Restrictions could take many forms, but the most common are “limited to existing roads and trails;” which allows vehicle travel only on roads that were in existence at the time of designation or have been authorized for future uses; “limited to designated roads and trails,” which allows vehicle travel only on roads that BLM designates by signs; and “seasonal restrictions,” which restricts vehicle travel in an area or on certain roads during some portion of the year (such as wintertime vehicle restrictions to protect big game on crucial winter range).

Under “limited to existing or designated roads and trails,” vehicle travel off roads is permitted only to accomplish necessary tasks and only if such travel would not result in resource damage. Necessary tasks are defined as work requiring the use of a motor vehicle. Examples include picking up big game kills, repairing range improvements, managing livestock, and conducting mineral activities, as described in the provisions of 43 CFR 3809.1-3.

Livestock Conversion: A discretionary action changing permitted use from one class of animal to another.

Locatable Minerals: Mineral disposable under the General Mining Act of 1872, as amended, that were not excepted in later legislation. They include hard rock, placer, industrial minerals, and uncommon varieties of rock found on public domain lands (see definition at 43 CFR 3830.10 and examples of minerals that are to be located by lode or placer claim at 43 CFR 3832.20).

Lotic: Riparian areas with running water habitat such as rivers, streams, creeks, and springs.

Lynx Analysis Unit (LAU): An LAU is a project analysis unit upon which direct, indirect, and cumulative effects analysis are performed. LAU boundaries should remain constant to facilitate planning and allow effective monitoring of habitat changes over time. An LAU is an area of at least the size used by an individual lynx, from about 25 to 50 square miles.

Major Pipeline: A pipeline that is 24 inches or more in outside-pipe diameter (Mineral Leasing Act of 1920 30 U.S.C. § 181; 36 CFR 251.54(f)(1)).

Management Decision: A decision made by the BLM to manage public lands. Management decisions include both land use plan decisions and implementation decisions.

Master Development Plans: A set of information common to multiple planned wells, including drilling plans, Surface Use Plans of Operations, and plans for future production.

Mineral: Any naturally formed inorganic material, solid or fluid inorganic substance that can be extracted from the earth, any of various naturally occurring homogeneous substances (as stone, coal, salt, sulfur, sand, petroleum, water, or natural gas) obtained usually from the ground. Under federal laws, considered as locatable (subject to the general mining laws), leasable (subject to the Mineral Leasing Act of 1920), and salable (subject to the Materials Act of 1947).

Mineral Entry: The filing of a claim on public land to obtain the right to any minerals it may contain.

Mineral Estate: The ownership of minerals, including rights necessary for access, exploration, development, mining, ore dressing, and transportation operations.

Mineral Location: The act of marking out and establishing rights by a claimant for mining purposes in accordance with the Mining Law of 1872, as amended.

Mineral Materials: Materials such as common varieties of sand, stone, gravel, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws but that can be acquired under the Materials Act of 1947, as amended; pursuant to the mineral material regulations at 43 CFR Part 3600 or 36 CFR 228 Subpart C.

Minimization Mitigation: Minimizing impacts by limiting the degree or magnitude of the action and its implementation (40 CFR 1508.20 (b)).

Mining Claim: A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

Mitigation: Includes specific means, measures or practices that could reduce, avoid, or eliminate adverse impacts. Mitigation can include avoiding the impact altogether by not taking a certain action or parts of an action, minimizing the impact by limiting the degree of magnitude of the action and its implementation, rectifying the impact by repairing, rehabilitation, or restoring the affected environment, reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and compensating for the impact by replacing or providing substitute resources or environments.

Modification (Oil and Gas Leasing): A change to the provisions of a lease stipulation, either temporarily or for the term of the lease. May maintain, increase, or decrease the level of environmental protection. Depending on the specific modification, the stipulation may or may not apply to all sites within the leasehold to which the restrictive criteria are applied (H-1624-1 – Planning for Fluid Mineral Resources).

Monitoring: The orderly collection, analysis, and interpretation of resource data to evaluate progress toward meeting management objectives. This process must be conducted over time in order to determine whether or not management objectives are being met. Monitoring also includes observations to evaluate baseline (i.e., pre-activity) conditions, evaluation of whether activities met desired goals and permit requirements (implementation monitoring), and evaluation of how well mitigation measures protected resource conditions (effectiveness monitoring).

Moraine: An accumulation of boulders, stones, and other earth debris carried and deposited by a glacier.

Multiple Use: Management of the public lands and their various resource values so that they are used in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and non-renewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output, as provided in the Multiple Use Sustained Yield Act.

National Ambient Air Quality Standards (NAAQS): The allowable concentrations of air pollutants in the ambient (public outdoor) air. National ambient air quality standards are based on the air quality criteria and divided into primary standards (allowing an adequate margin of safety to protect the public health) and secondary standards (allowing an adequate margin of safety to protect the public welfare). Welfare is defined as including, but not limited to, effects on soils, water, crops, vegetation, human-made materials, animals, wildlife, weather, visibility, climate, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.

National Environmental Policy Act of 1969 (NEPA): The National Environmental Policy Act (NEPA) [42 U.S.C. 4321 et seq.] was signed into law on January 1, 1970. The Act establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and provides a process for implementing these goals within the federal agencies. The Act also establishes the Council on Environmental Quality (CEQ).

National Historic Trail: A congressionally designated trail that is an extended, long-distance trail, not necessarily managed as continuous, that follows as closely as possible and practicable the original trails or routes of travel of national historic significance. The purpose of a National Historic Trail is the identification and protection of the historic route and the historic remnants and artifacts for public use and enjoyment. A National Historic Trail is managed in a manner to protect the nationally significant resources, qualities, values, and associated settings of the areas through which such trails may pass, including the primary use or uses of the trail.

National Register of Historic Places (NRHP): The official list of United States government's historic districts, sites, buildings, structures, and objects deemed worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Register of Historic Places is a national program to

coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

National Scenic Trail: A congressionally designated trail that is a continuous and uninterrupted extended, long-distance trail so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant resources, qualities, values, and associated settings and the primary use or uses of the areas through which such trails may pass. National Scenic Trails may be located so as to represent desert, marsh, grassland, mountain, canyon, river, forest, and other areas, as well as landforms that exhibit significant characteristics of the physiographic regions of the Nation.

National Wild and Scenic Rivers (WSR): The system of congressionally designated rivers and their immediate environments that have outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition.

Native Plant Species: Species that were found here before European settlement, and consequently are in balance with these ecosystems because they have well developed parasites, predators, and pollinators.

Necessary Tasks: Administrative duties or work requiring the use of motor vehicles, such as retrieving big game kills, repairing range improvements, management of livestock, geophysical exploration activities and other types of leasable mineral exploration activity (other than casual use), or performing mining claim functions resulting in less than 5 acres of surface disturbance as described in 43 CFR 3809. Mining claimants may exercise their rights to cause more than 5 acres disturbance as part of exploring for or mining locatable minerals 36 CFR 3809.5.

Net Conservation Gain: The actual benefit or gain above baseline conditions.

No Surface Occupancy (NSO): Land use allocation or approval restriction used when surface disturbance cannot be mitigated and must be prohibited. The land use decision or stipulation identifies the NSO area and allowed or excepted uses in the area. NSO stipulations are used on oil and gas leases where drilling and/or operations impacts cannot be adequately mitigated but fluid mineral resources may be recovered by directional drilling. Exclusion Area designations in the Realty Program are NSO land use decisions. This stipulation can be used to prohibit other surface disturbing or disruptive activities such as commercial recreational activities, mining, and timber harvest (see also Stipulation Category) (IBWY-2007-029).

Noncommercial Forestland: Land that is not capable of yielding at least 20 cubic feet of wood per acre per year of commercial species; also, land that is capable of producing only noncommercial tree species.

Non-Point Source Pollution: A pollution source that is not specific in location. The source of the discharge is dispersed, not well defined, or constant.

[3809] Notice-level Mining Activities: A notice is required for exploration activity greater than casual use that will cause surface disturbance of 5 acres or less on BLM-administered lands and split-estate. The content of the notice will determine whether the operation qualifies as a notice-level operation and will not cause undue and unnecessary degradation (43 CFR 3809.21).

Noxious Weeds: A plant species designated by federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States.

Objective: A description of a desired outcome for a resource. Objectives can be quantified and measured and, where possible, have established timeframes for achievement (H-1601-1, Land Use Planning Handbook).

Occupied Lek: A lek that has been active during at least one strutting season within the prior 10 years.

Occupied Habitat: The area currently used by GRSG during any point in its life history. This use may be for a short amount of time (i.e., migration) or used throughout the year. In addition, this includes areas used inconsistently and/or seasonally.

Off-Highway Vehicle (OHV): Any motorized tracked or wheeled vehicle designed for cross-country travel over any type of natural terrain. Exclusions (from Executive Order 11644, as amended by Executive Order 11989) are non-amphibious registered motorboats; any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; any vehicle whose use is expressly authorized by the authorizing officer or otherwise officially approved; vehicles in official use; and any combat support vehicle in times of national defense emergencies.

Off-Highway Vehicle Management Designations: Designations that apply to all off-road vehicles regardless of the purposes for which they are being used. Emergency vehicles are excluded. The Off Road Vehicle (ORV) designation definitions have been developed in cooperation with representatives of the U.S. Forest Service, U.S. Park Service, and BLM State and District personnel. It is recognized that there are differences between OHVs and over-the-snow vehicles in terms of use and impact. Therefore, travel by over-the-snow vehicles is permitted off existing routes and in all open or limited areas (unless otherwise specifically limited or closed to over-the-snow vehicles) if they are operated in a responsible manner without damaging the vegetation or harming wildlife. Designations include—

Closed: Vehicle travel is prohibited in the area. Access by means other than motorized vehicle is permitted.

Open: Vehicle travel is permitted in the area (both on and off roads) if the vehicle is operated responsibly in a manner not causing, or unlikely to cause significant, undue damage to or disturbance of the soil, wildlife, wildlife habitat, improvements, cultural, or vegetative resources or other authorized uses of the public lands.

Limited:

1) Vehicle travel is permitted only on existing roads and vehicle routes that were in existence prior to the date of designation in the *Federal Register*. Vehicle travel off existing vehicle routes is permitted only to accomplish necessary tasks and only if such travel does not result in resource damage. Random travel from existing vehicle routes is not allowed. Creation of new routes or extensions and/or widening of existing routes is not allowed without prior written agency approval.
2) Vehicle travel is permitted only on roads and vehicle routes designated by BLM. In areas where final designation has not been completed, vehicle travel is limited to existing roads and vehicle routes as described above. Designations are posted as follows:
    a) Vehicle route is open to vehicular travel.
    b) Vehicle route is closed to vehicular travel.
3) Vehicle travel is limited by number or type of vehicle. Designations are posted as follows:
    a) Vehicle route limited to 4-wheel drive vehicles only.
    b) Vehicle route is limited to motorbikes only.
    c) Area is closed to over-the-snow vehicles.
4) Vehicle travel is limited to licensed or permitted use.
5) Vehicle travel is limited to time or season of use. Posted as follows:
    a) Seasonal closure to all motor vehicles (the approximate dates of closure are indicated).
6) Where specialized restrictions are necessary to meet resources management objectives, other limitations may also be developed. Posted as follows: Recreational OHV Play Areas.

Offsite Mitigation: Compensating for resource impacts by replacing or providing substitute resources or habitat at a different location than the project area.

Oil and Gas Lease: A legal contract granting the right to explore for, develop and produce oil and gas resources for a specific period of time under certain agreed-upon terms and conditions.

Open Designation (OHV): Under this designation, vehicle travel is permitted in the area (both on and off roads) if the vehicle is operated responsibly in a manner that will not cause significant undue damage to the soil, wildlife, vegetation, cultural resources, or other important resources on the public lands.

Out-of-kind Mitigation: The replacement or substitution of resources or values that are not the same type and kind as those impacted, but are related or similar.

Overstory: The portion of vegetation in a forest that forms the uppermost foliage layer.

Paleontological Resources (Fossils): The physical remains or traces of plants and animals preserved in soils and sedimentary rock formations.

Particulate Matter (PM): Fine liquid or solid particles suspended in the air and consisting of dust, smoke, mist, fumes, and compounds containing sulfur, nitrogen, and metals.

Partners: an association of individuals or groups with like interests due to the scope or location of a project on federal lands or in regard to a federal permitting process.

Parturition Area: Documented birthing areas commonly used by females. They include calving areas, fawning areas, and lambing grounds. These areas may be used as nurseries by some big game species.

Passerine Birds: Birds of the order Passeriformes, which includes perching birds and songbirds such as blackbirds, jays, finches, warblers, and sparrows. More than half of all birds belong to this order.

Perennial Surface Waters: Streams, lakes, or other surface water bodies that flow or contain water year-round in most years. These water bodies are primarily fed by groundwater during the low-flow season. These systems would generally *only* dry up during drought conditions. In the case of streams, this term can refer to the persistence of surface waters along a channel (i.e., few reaches where the infiltration into the stream aquifer exceeds the flow).

Permittee: A person or company authorized to use or occupy BLM-administered land.

Persistent Woodlands: Long-lived pinyon-juniper woodlands that typically have sparse understories and occur on poor substrates in the assessment area.

Personal Income: The sum of wage and salary disbursements, other labor income, proprietors' income, rental income of persons, personal dividend income, personal interest income, and transfer payments to persons, less personal contributions for social insurance.

pH: A measure of acidity or hydrogen ion activity. Neutral is pH 7.0. All values below 7.0 are acidic, and all values above 7.0 are alkaline.

Plan: A document that contains a set of comprehensive, long-range decisions concerning the use and management of BLM-administered resources in a specific geographic area.

Plan of Operations: A [3809] Plan of Operations is required for all locatable mining exploration activity greater than 5 acres or surface disturbance greater than casual use on certain special category lands. Special category lands are described under 43 CFR 3809.11(c) and include such lands as designated Areas of Critical

Environmental Concern, lands within the National Wilderness Preservation System, and areas closed to off-road vehicles, among others. In addition, a plan of operations is required for activity greater than casual use on lands patented under the Stock Raising Homestead Act with Federal minerals where the operator does not have the written consent of the surface owner (43 CFR 3814 & 3809.31(d)). The Plan of operations needs to be filed in the BLM field office with jurisdiction over the land involved. The Plan of Operations does not need to be on a particular form but must address the information required by 43 CFR 3809.401(b). A Plan of Operation is required if 'any operation is causing or will likely cause significant disturbance of surface resources' (36 CFR 228.4).

Planning Area: A geographical area for which land use and resource management plans are developed and maintained.

Planning Criteria: The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions.

Planning Base: Law, regulation, policy, land use plan decisions (e.g., RMPs, Resource Management Plan Amendments, and Management Framework Plan Amendments), NEPA documents (e.g., EISs Administrative Determinations, EAs, and Categorical Exclusion Reviews), and supporting data (e.g., automated databases, research, and evaluations).

Point Source Pollution: Any discernable, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, or container from which pollutants are or may be discharged to a receiving water body, wetland, etc.

Policy: This is a statement of guiding principles, or procedures, designed and intended to influence planning decisions, operating actions, or other affairs of the BLM. Policies are established interpretations of legislation, executive orders, regulations, or other presidential, secretarial, or management directives.

Population: A group of organisms, all of the same species, which occupies a particular area. The term is used to refer to the number of individuals of a species within an ecosystem or of any group of like individuals.

Potential Wild And Scenic River: A body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, nills, and small lakes that possess free-flowing condition and outstandingly remarkable values and therefore may have potential for addition to the National System.

Preference: See Grazing Preference.

Prehistoric: Information about past events prior to the recording of events in writing. The period of prehistory differs around the world depending upon when written records became common in a region.

Prescribed Fire: Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist and NEPA requirements, where applicable, must be met before ignition.

Prescribed Fire Plan (Burn Plan): This document provides the prescribed fire burn boss information needed to implement an individual prescribed fire project.

Prescription: Measurable criteria that define conditions under which a prescribed fire or wildland fire for resource benefit may be used to guide selection of appropriate management responses and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Primary Paved Road: This road provides access between major points and includes major and minor highways.

Primary Unpaved Road: This road is regularly maintained, wide enough for at least two vehicles, provides access between major points, and serves a large area branching from it.

Primitive Road (BLM): A linear route managed for use by four-wheel drive or high-clearance vehicles. These routes do not customarily meet any BLM road design standards (H-8342-1, Travel and Transportation Management Handbook).

Priority Areas for Conservation (PAC): Key habitats identified by state sage-grouse conservation plans (for each state that has such a plan), or through other sage-grouse conservation efforts (e.g., the current BLM planning effort for GRSG).

Priority Habitat: Sage-grouse priority habitats (as defined in the NTT report, pg. 7) are areas that have the highest conservation value to maintaining or increasing Sage-grouse populations. These areas would include breeding, late brood-rearing, winter concentration areas, and where known, migration or connectivity corridors. Sage-grouse priority habitat includes core plus connectivity habitat.

Priority Habitat Management Area: Sage-grouse priority habitats are areas that have the highest conservation value to maintaining or increasing Sage-grouse populations. These areas would include breeding, late brood-rearing, winter concentration areas, and where known, migration or connectivity corridors. Sage-grouse Priority Habitat Management Area includes core plus connectivity habitat.

Produced Water: Groundwater produced in conjunction with the extraction of minerals.

Proper Functioning Condition (PFC): A riparian-wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary to fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation (Prichard et al. 1998). There are two categories of wetlands—lentic areas, which are created by a stable water table such as playas, fens, around lakes, marshes etc., and lotic areas, which are in riverine environments.

Proposed Species: Species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior as determined by the US Fish and Wildlife Service. A proposed rule has been published in the *Federal Register.*

Public Domain: The term applied to any or all of those areas of land ceded to the Federal Government by the Original States and to such other lands as were later acquired by treaty, purchase or cession, and are disposed of only under the authority of Congress.

Public Lands: As used in this document, federally owned surface or mineral estate specifically administered by BLM.

Range Improvement: The term range improvement means any activity, structure or program on or relating to rangelands which is designed to improve production of forage, change vegetative composition, control patterns of use, provide water, stabilize soil and water conditions, and provide habitat for livestock and wildlife. The term includes, but is not limited to, structures, treatment projects, and use of mechanical means to accomplish the desired results.

Range Trend: The direction of change in range condition over time, either toward or away from desired management objectives.

Rangeland: Land on which the indigenous (climax or natural potential) vegetation is predominantly grasses, grass-like plants, forbs, or shrubs and is managed as a natural ecosystem. If plants are introduced, they are managed similarly. Rangelands include natural grasslands, savannas, shrublands, many deserts, tundras, alpine communities, marshes and meadows.

Raptor: Bird of prey with sharp talons and strongly curved beaks such as hawks, owls, vultures, ravens, and eagles.

Raptor Concentration Area (RCA): A localized area where raptors congregate that may provide thermal protection, increased forage availability, and a minimal level of stress-inducing disturbances.

Reasonably Foreseeable Development (RFD): A projection of likely exploration, development, and production of oil and gas within a study area based on existing and credible geologic data, technology, economics, and activity trends.

Reclamation: The suite of actions taken within an area affected by human disturbance, the outcome of which is intended to change the condition of the disturbed area to meet pre-determined objectives and/or make it acceptable for certain defined resources (e.g., wildlife habitat, grazing, ecosystem function, etc.).

Reclamation Plans: Plans that guide the suite of actions taken within an area affected by human disturbance, the outcome of which is intended to change the condition of the disturbed area to meet pre-determined objectives and/or make it acceptable for certain defined resources (e.g., wildlife habitat, grazing, ecosystem function, etc.).

Recreation Opportunity Spectrum (ROS) Classes: A planning process that provides a framework for defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for experiences are arranged along a continuum or spectrum of six classes: primitive, back country, middle country, front country, rural, and urban. The resulting analysis defines specific geographic areas on the ground, each of which encompasses one of the six classes.

Reference State: The reference state is the state where the functional capacities represented by soil/site stability, hydrologic function, and biotic integrity are performing at an optimum level under the natural disturbance regime. This state usually includes, but is not limited to, what is often referred to as the potential natural plant community.

Required Design Features: Required Design Features (RDF) are required for certain activities in priority GRSG habitat. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. However, the applicability and overall effectiveness of each RDF cannot be fully assessed until the project level when the project location and design are known. Because of site-specific circumstances, some RDFs may not apply to some projects (e.g., a resource is not present on a given site) and/or may require slight variations (e.g., a larger or smaller protective area). All variations in RDFs would require that at least one of the following be demonstrated in the NEPA analysis associated with the project/activity:

- A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g., due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.
- An alternative RDF, a state-implemented conservation measure, or plan-level protection is determined to provide equal or better protection for GRSG or its habitat.
- A specific RDF will provide no additional protection to GRSG or its habitat.

Research Natural Area (RNA): A physical or biological unit in which current natural conditions are maintained as much as possible. These conditions are ordinarily achieved by allowing natural, physical, and biological processes to prevail without human intervention. However, under unusual circumstances,

deliberate manipulation may be utilized to maintain the unique feature that the RNA was established to protect.

Reserve Common Allotment: An area which is designated in the land use plan as available for livestock grazing but reserved as an area available for use as an alternative to grazing in another allotment in order to facilitate rangeland restoration treatments and recovery from natural disturbances such as drought or wildfire. The reserve common allotment would provide needed flexibility that would help the agency apply temporary rest from grazing where vegetation treatments and/or management would be most effective.

Residual Impacts: Impacts from an authorized land use or implementation-level decision that remain after applying avoidance and minimization mitigation; also referred to as unavoidable impacts.

Response to Wildland Fire: Specific actions taken in response to a wildland fire to implement protection and fire use objectives (WO IM 2009-112 which transmitted and adopted *Guidance for Implementation of Federal Wildland Fire Management Policy* dated February 13, 2009).

Restoration: Implementation of a set of actions that promotes plant community diversity and structure that allows plant communities to be more resilient to disturbance and invasive species over the long term. The long-term goal is to create functional, high quality habitat that is occupied by sage-grouse. Short-term goal may be to restore the landform, soils and hydrology and increase the percentage of preferred vegetation, seeding of desired species, or treatment of undesired species.

Resource Damage: Damage to any natural or cultural resources that results in impacts such as erosion, water pollution, degradation of vegetation, loss of archeological resources, or the spread of weeds.

Resource Management Plan (RMP): A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, coordination guidelines for multiple-use, objectives, and actions to be achieved.

Restriction/Restricted Use: A limitation or constraint on public land uses and operations. Restrictions can be of any kind, but most commonly apply to certain types of vehicle use, temporal and/or spatial constraints, or certain authorizations.

Right-of-Way: Public land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project or facility passing over, upon, under, or through such land (36 CFR 251.51). A ROW grant (BLM) is an authorization to use a specific piece of public land for a specific project, such as roads, pipelines, transmission lines, and communication sites. The grant authorizes rights and privileges for a specific use of the land for a specific period of time.

Right-of-Way Corridor: A parcel of land (often linear in character) that has been identified through the land use planning process as being a preferred location for existing and future utility rights-of-way and that is suitable to accommodate one or more rights-of-way that are similar, identical, or compatible. Corridors may accommodate **multiple pipelines** (such as for oil and gas), **electricity transmission lines**, and **related infrastructure**, such as access and maintenance roads, compressors, pumping stations, and other structures.

Riparian: Referring to or relating to areas adjacent to water or influenced by free water associated with streams or rivers on geologic surfaces occupying the lowest position in the watershed. (See definition for Lentic and Lotic). (See also Wetland/Riparian.)

Riparian Area: A form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian

areas (See BLM Manual 1737). Included are ephemeral streams that have vegetation dependent upon free water in the soil. All other ephemeral streams are excluded.

Riparian Communities: Communities of vegetation associated with either open water or wetlands. Examples are cottonwood and willow communities, meadows, aspens near water sources, and other trees, grasses, forbs, and shrubs associated with water.

River Eligibility: Qualification of a river for inclusion into the National Wild and Scenic Rivers System through the determination (professional judgment) that it is free-flowing and, with its adjacent land area, possesses at least one river-related value considered to be outstandingly remarkable.

Road: A linear route declared a road by the owner, managed for use by low-clearance vehicles having four or more wheels, and maintained for regular and continuous use (H-8342-1, Travel and Transportation Management Handbook).

Road Category Level: Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria. There are five maintenance levels:

- **Level 1:** Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period is one year or longer. Basic custodial maintenance is performed.
- **Level 2:** Assigned to roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration.
- **Level 3:** Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.
- **Level 4:** Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds.
- **Level 5:** Assigned to roads that provide a high degree of user comfort and convenience. Normally, roads are double-lane and paved or aggregate-surfaced with dust abatement.

Roadless Areas: Undeveloped areas that meet eligibility criteria for wilderness consideration under the Wilderness Act (36 CFR 219.17).

Rough Proportionality: The required dedication is related both in nature and extent to the proposed development's impact.

Runoff: The total stream discharge of water, including both surface and subsurface flow, usually expressed in acre-feet of water yield.

Sagebrush Focal Area: Areas identified by the USFWS that represent recognized “strongholds” for GRSG that have been noted and referenced as having the highest densities of GRSG and other criteria important for the persistence of GRSG.

Sage-grouse Breeding Habitats: Breeding habitats are composed of leks, nesting and early broad rearing habitats.

Sage-grouse Core Habitat: (as defined in WY EO 2015-4) is one of two components of Sage-Grouse Priority Habitat Management Areas. Core habitats are state-designated areas identified as the most important for Greater Sage-grouse and include breeding, late brood-rearing, and wintering seasonal habitat. It does not include known migration or connectivity corridors.

Sage-grouse Winter Habitats: During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds. Suitable winter habitat requires sagebrush above snow. Sage-grouse tend to select wintering sites

where sagebrush is 10 to 14 inches above the snow. Sagebrush canopy cover used by sage-grouse above the snow may range from 10 to 30%. Foraging areas tend to be on flat to generally southwest facing slopes and windswept ridges.

Salable Minerals: Minerals that may be disposed of through sales and free use permits under the Materials Act of 1947, as amended. Included are common varieties of sand, stone, gravel, and clay (See also Mineral Materials).

Scenic Integrity: An indicator of an areas visual appearance, either stated as an objective or current condition, related to the characteristic landscape."

Scenic Resource: Attributes, characteristics, and features of landscapes that provide varying responses from, and varying degrees of benefits to, humans.

Scenic Quality: The relative worth of a landscape from a visual perception point of view. Scenic quality is rated as Class A (high), Class B (medium), or Class C (low).

Scoping: The process of identifying the range of issues, management concerns, preliminary alternatives, and other components of an environmental impact statement or land-use planning document. It involves both internal and public viewpoints.

Season of Use: A livestock grazing permit term and condition identifying the time during which livestock graze a given area to achieve management and resource condition objectives.

Secondary Paved Road: This is a paved road, not a highway, with other roads of lesser quality branching from it. It is not usually striped and connects primary roads and major points.

Secondary Unpaved Road: This one-lane road is regularly maintained with other roads of lesser quality branching from it. It usually connects primary roads and major points.

Section 110 Inventory: Refers to Section 110 of the National Historic Preservation Act of 1966, as amended. Section 110 of the Act directs federal agencies to establish a preservation program for the identification, evaluation, and nomination to the National Register of Historic Places, cultural properties that are under the agencies' jurisdiction or control. Section 110 also directs federal agencies to coordinate their respective preservation programs with the State Historic Preservation Offices, local governments, and Indian tribes (110.a.2.D).

Sensitive Soils: Land areas that have a moderate to very high hazard for soil compaction, erosion, or displacement. These soils include, but are limited to, red soils, saline soils, sandy soils, highly calcareous, and shallow.

Sensitive Species: Those species designated by a State Director, usually in cooperation with the State agency responsible for managing the species and state natural heritage programs. They are those species that: (1) could easily become endangered or extinct in a state; (2) are under status review by the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federal listing, proposal, or candidate status may become necessary; (5) typically have small and widely dispersed populations, or (6) inhabit ecological refugia or other specialized or unique habitats.

Seral Stage: The relatively transitory communities that develop under plant succession generally described as early, mid, and late seral stages. The mix of seral or successional stages on the landscape can be the result

of disturbances, topography and soil, climate, uses of the land, management prescriptions, vegetation classification categories, and evaluation procedures.

Shrub: A plant that has persistent woody stems and a relatively low growth habit, and that generally produces several basal shoots instead of a single bole.

Size Class: Tree size recognized by distinct ranges, usually of diameter or height.

Smoke Management: Application of fire intensities and meteorological processes to minimize degradation of air quality during prescribed fires or fires for resource benefit.

Spatial Management: As used in this document, intensive control of the location and level of surface disturbance that is allowed in a particular area.

Special Area Designation: A title conferred on a specified area through the land use planning process, which identifies the area as being in need of special management attention. Examples of special area designations include Special Recreation Management Areas, Areas of Critical Environmental Concern, Special interest area, and Wildlife Habitat Management Areas.

Special Recreation Management Area (SRMA): A public lands unit identified in land use plans to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities (i.e., activity, experience, and benefit opportunities). Both land use plan decisions and subsequent implementing actions for recreation in each SRMA are geared to a strategically identified primary recreation-tourism market – destination, community, or undeveloped, as well as a corresponding and distinguishing recreation management strategy. Recreation settings or natural resource settings are prescribed as part of the land-use allocation decision. Subsequent implementing actions, as identified in the activity planning framework, are proactive and address management, marketing and visitor information, and monitoring and administration.

Special Status Species: Proposed species, listed species, and candidate species under the Endangered Species Act; state-listed species; and BLM State Director-designated sensitive species (see BLM Manual 6840—Special Status Species Policy).

Split Estate: This is the circumstance where the surface of a particular parcel of land is owned by a different party than the minerals underlying the surface. Split estates may have any combination of surface/subsurface owners: Federal/State; Federal/private; State/private; or percentage ownerships. When referring to the split estate ownership on a particular parcel of land, it is generally necessary to describe the surface/subsurface ownership pattern of the parcel.

Standard: A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., land health standards).

Standard Lease Term: The terms incorporated into every oil and gas lease. Standard lease terms require compliance with all laws and regulations to ensure protection of other energy, mineral, and surface resources, such as soil, water, vegetation, cultural, and threatened and endangered species. It is important to recognize that the authorized officer has the authority to modify the siting and design of facilities, control the rate of development and timing of activities as well as require other mitigation under Sections 2 and 6 of the standard lease terms (BLM Form 3100-11 and 43 CFR 3101.1-23).

Stakeholders: Individuals or groups who are involved in or affected by a course of action that is being proposed in a project plan affecting federal lands or a federal permitting process.

State: A state is comprised of an integrated soil and vegetation unit having one or more biological communities that occur on a particular ecological site and that are functionally similar with respect to the three attributes (soil/site stability, hydrologic function, and biotic integrity) under natural disturbance regimes.

State Listed Species: Species proposed for listing or listed by a state in a category implying but not limited to potential endangerment or extinction. Listing is either by legislation or regulation.

Stipulation (General): A term or condition in an agreement, contract, or written authorization.

Stipulation (Oil and Gas): A restriction placed on an oil and gas lease or other use authorization to protect other resources (e.g., a seasonal restriction to protect big game in their winter range or in their calving areas) or land uses and is attached to and made a part of the lease. The restriction precludes or restricts activities.

Stipulation Category: Land use decisions or authorization requirements intended to mitigate impacts of surface disturbing or disruptive activities. These include RMP decisions, oil and gas lease stipulations, conditions of approval, and terms and conditions. These stipulations may prohibit surface use, allow surface use under certain conditions, or allow surface use during certain times (see also No Surface Occupancy, Controlled Surface Use, and Timing Limitation).

Stochastic: Randomly determined event, chance event, a condition determined by predictable processes and a random element.

Strutting Ground: An area used by sage-grouse in early spring for elaborate, ritualized courtship displays. See also Lek.

Substrate: The mineral or organic material that forms the bed of a stream; the base upon which an organism lives; the surface on which a plant or animal grows or is attached.

Succession: The progressive replacement of plant communities on a site which leads to a potential natural plan community, attaining stability.

Suitable Habitat (Habitat Assessment Framework or HAF): is categorized in multiple quality-based descriptions, including marginal and suitable.

-Marginal habitats are described as maintaining 5 to 15 percent sagebrush canopy cover.

-Suitable habitats are described as maintaining 15 to 25 percent sagebrush canopy cover.

Where sagebrush canopy covers would be above or below these percentages, the habitat would be categorized as “unsuitable.”

Suitable Sage-Grouse Habitat (Wyoming Executive Order): is within the mapped occupied range of the species and maintains greater than 5 percent canopy sagebrush cover or sagebrush escape cover (i.e., >10% canopy) is within 60 meters of wet meadow, alfalfa or other suitable forbs areas. Areas below the 5 percent sagebrush canopy cover, and outside of the wet meadow example, would be considered “unsuitable” for GRSG.

Surface Discharge: The release of produced water onto the unconfined land surface or into an existing drainage system.

Surface Disturbance: Suitable habitat is considered disturbed when it is removed and unavailable for immediate sage-grouse use.

a. Long-term removal occurs when habitat is physically removed through activities that replace suitable habitat with long term occupancy of unsuitable habitat such as a road, power line, well pad

or active mine. Long-term removal may also result from any activities that cause soil mixing, soil removal, and exposure of the soil to erosive processes.

b. Short–term removal occurs when vegetation is removed in small areas, but restored to suitable habitat within a few years (< 5) of disturbance, such as a successfully reclaimed pipeline, or successfully reclaimed drill hole or pit.

c. Suitable habitat rendered unusable due to numerous anthropogenic disturbances.

d. Anthropogenic surface disturbance are surface disturbances meeting the above definitions which result from human activities.

e. Activity to be present in these habitats for a duration of more than 1 hour during any one 24-hour period during the application season in the site-specific area.

Surface Disturbing Activities: An action that alters the vegetation, surface/near surface soil resources, and/or surface geologic features, beyond natural site conditions and on a scale that affects other Public Land values. Examples of surface disturbing activities may include: operation of heavy equipment to construct well pads, roads, pits and reservoirs; installation of pipelines and power lines; and the conduct of several types of vegetation treatments (e.g., prescribed fire, etc.). Surface disturbing activities may be either authorized or prohibited (WY IB-2007-029).

Surface Management: Operations conducted on BLM administered lands pursuant to the 43 CFR Subpart 3809 regulations. The three levels of operations under these regulations are defined in this glossary include Casual Use, Notice and Plan of Operations. Use and Occupancy of mining claims pursuant to 43 CFR Subpart 3715 that is reasonably incident to Notices and Plans of Operations may also take place pursuant to review and approval by the BLM Authorized Official (AO).

Surface Occupancy: Placement or construction on the land surface of semi-permanent or permanent facilities requiring continual service or maintenance. Casual use is not included.

Surface Use(s): These are all the various activities that may be present on the surface or near-surface (e.g., pipelines), of the public lands. It does not refer to those subterranean activities (e.g., underground mining, etc.) occurring on the public lands or federal mineral estate. When administered as a use restriction (e.g., *No Surface Use [NSU]*), this phrase prohibits all but specified resource uses and activities in a certain area to protect particular sensitive resource values and property. This designation typically applies to small acreage sensitive resource sites (e.g., plant community study exclosure, etc.), and/or administrative sites (e.g., government ware-yard, etc.) where only authorized, agency personnel are admitted.

Take: As defined by the Endangered Species Act, "to harass, harm, pursue, hunt, shoot, wound, kill, capture, or collect, or attempt to engage in any such conduct."

Tall Structures: A wide array of infrastructures (e.g., poles that support lights, telephone and electrical distribution, communication towers, meteorological towers, high-tension transmission towers, and wind turbines) that have the potential to disrupt lekking or nesting birds by creating new perching/nesting opportunities and/or decreasing the use of an area. A determination as to whether something is considered a tall structure would be based on local conditions such as vegetation or topography.

Technically/Economically Feasible: Actions that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant. It is the BLM's sole responsibility to determine which actions are technically and economically feasible. The BLM will consider whether implementation of the proposed action is likely given past and current practice and technology; this consideration does not necessarily require a cost-benefit analysis or speculation about an applicant's costs and profit. (Modified from the CEQ's 40 Most Asked Questions and BLM NEPA Handbook, Section 6.6.3.).

Temporal Management: As used in this document, intensive control of the period during which BLM will allow activities that are physiologically disturbing or disruptive to normal wildlife activities such as elk migration.

Temporary Special Use Permit: A type of permit that terminates within 1 year or less after the approval date. All other provisions applicable to permits apply fully to temporary permits. Temporary special use permits are issued for seasonal or short-duration uses involving minimal improvement and investment.

Temporary/Temporary Use: A relative term that must be considered in the context of the resource values affected and the nature of the resource use/uses/activity/activities taking place. Generally, a temporary activity is considered to be one that is not fixed in place and is of short duration.

Thermal Cover: Cover used by animals to ameliorate the effects of weather. Optimally, thermal cover is provided by a stand of coniferous trees, 30 to 60 acres in size, at least 40 feet tall, with a canopy cover of at least 70 percent.

Threatened Species: Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range; listings are published in the *Federal Register* as determined by the US Fish and Wildlife Service and the Secretary of Interior.

Thrust Fault: A reverse fault that is characterized by a low angle of inclination with reference to a horizontal plane.

Timeliness: The conservation benefits from compensatory mitigation accruing as early as possible or before impacts have begun (BLM Manual Section 1794).

Timing Limitation: A stipulation that prohibits surface disturbing or disruptive activities during specified times to protect identified resource values during sensitive periods (see also Stipulation Category). The stipulation does not apply to the operation or maintenance of production facilities unless the finding analysis demonstrates the continued need for such mitigation and the insufficiency of less stringent, project-specific mitigation measures."

Traditional Cultural Property (TCP) Site: A cultural resource known to be perceived by a specified social and/or cultural group as important in maintaining the cultural identity, heritage, or well-being of the group. In the planning area, this mainly pertains to cultural sites that are sensitive to Native American tribes.

Trail (BLM): Linear routes managed for human-powered, stock, or off-road vehicle forms of transportation, or for historical or heritage values. Trails are not generally managed for use by four-wheel drive or high-clearance vehicles (H-8342-1, Travel and Transportation Management Handbook).

Transfer of Grazing Preference: The BLM's approval of an application to transfer grazing preference from one party to another or from one base property to another, or both. Grazing preference means a superior or priority position against others for the purposes of receiving a grazing permit or lease. This priority is attached to base property owned or controlled by the permittee or lessee.

Transition: A shift between two states. Transitions are not reversible by simply altering the intensity or direction of factors that produced the change. Instead, they require new inputs such as revegetation or shrub removal. Practices, such as these, that accelerate succession are often expensive to apply.

Transmission Line: An electrical utility line with a capacity greater than or equal to 100kV or a natural gas, hydrogen, or water pipeline greater than or equal to 24" in diameter.

Trophy Game Animal: Black bear, grizzly bear, or mountain lion.

Turbidity: interference to the passage of light through water due to insoluble particles of soil, organics, microorganisms and other materials.

Unavailable for Leasing: No new oil and gas leases would be sold in areas with this designation.

Undetermined Lek: Any lek that has not been documented active in the last ten years, but survey information is insufficient to designate the lek as unoccupied.

Unitization: Operation of multiple leases as a single lease under a single operator.

Unknown Lek: Leks for which status as active or inactive has not been documented during the course of a strutting season. Except for those leks not scheduled for checks in a particular year, use of this status should be rare. Leks should be checked with enough visits to determine whether it is active or not.

Unoccupied Lek: A lek that has either been "destroyed" or "abandoned."

Unsuitability Criteria: Criteria of the federal coal management program by which lands may be assessed as unsuitable for all or certain stipulated methods of coal mining.

Uplands: Lands at higher elevations than alluvial plains or low stream terraces; all lands outside the riparian-wetland and aquatic zones.

Utility Corridor: A designated parcel of land, either linear or areal in character, which has ecological, technical, economic, social, or similar advantages over other areas for the present and future location of transportation and/or utility rights of way within its boundaries. Utilities include but are not limited to major energy and telecommunications facilities.

Utility-Scale and/or Commercial Energy Development: A project that is capable of producing 20 or more megawatts of electricity for distribution to customers through the electricity-transmission-grid system.

Utilization: The proportion of the current year's forage production that is consumed by grazing animals. Utilization is usually expressed as a percentage.

Valid Existing Rights: Documented, legal rights or interests in the land that allow a person or entity to use said land for a specific purpose and that are still in effect. Such rights include, but are not limited to, fee title ownership, mineral rights, rights-of-way, easements, permits, and licenses. Such rights may have been reserved, acquired, leased, granted, permitted, or otherwise authorized over time.

Vegetative Cover: The proportion of land or ground surface of an area covered by vegetation.

Vegetation Treatments: Management practices that change the vegetation structure to a different stage of development. Vegetation treatment methods include managed fire, prescribed fire, chemical, mechanical, and seeding.

Viability: For purposes of NFMA and its enabling regulations, viability is the availability of habitat that allows a species to persist on landscapes for long-periods (multi-generational) of time. It assumes that populations are abundant (sufficient numbers) and well-distributed (sufficient redundancy of populations) to provide for long-term population persistence on a landscape.

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions from a viewpoint or along a transportation corridor.

Visual Resource: Visible feature of the landscape, such as land, water, vegetation, animals, and other features that make up the scenery of an area.

Visual Resource Management (VRM): The system by which BLM classifies and manages scenic values and visual quality of public lands. The system is based on research that has produced ways of assessing aesthetic qualities of the landscape in objective terms. After inventory and evaluation, lands are given relative visual ratings (management classes), which determine the amount of modification allowed for the basic elements of the landscape.

Visual Resource Management (VRM) Classes: Visual resource management classes define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. The four classes are described below:

- **Class I** provides for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar areas where landscape modification activities should be restricted.
- **Class II** areas are those areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.
- **Class III** includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- **Class IV** applies to areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

Waiver (Oil and Gas): Permanent exemption from a lease stipulation. The stipulation no longer applies anywhere within the leasehold (H-1624-1 – Planning for Fluid Mineral Resources). The authorized officer may waive restrictions if, in coordination with the state wildlife agency, it is determined that the site is no longer considered in the land use plan to be within GRSG priority, sagebrush focal, or general areas, or GRSG are not listed by the U.S. Fish and Wildlife Service as threatened or endangered under the Endangered Species Act.

WAFWA Management Zone GRSG Conservation Team: WAFWA management zones will be used to identify and address cross-state issues, such as regional mitigation and adaptive management monitoring and response, through WAFWA Management Zone GRSG Conservation Teams (Teams). These Teams will convene and respond to issues at the appropriate scale, and will utilize existing coordination and management structures to the extent possible.

Water Disposal Pit: A pit designed under the authority of Onshore Oil and Gas Order #7 for containment of produced water (water produced in conjunction with oil and gas production) as defined in said order. Water disposal pits can be temporary or permanent.

Water Evaporation Pit: A water disposal pit that disposes of produced water via the process of evaporation.

Water Table: The plane surface between the zone of saturation and the zone of aeration. Measured as the elevation where the groundwater surface is at equilibrium with atmospheric pressure. The water table is typically measured with a shallow groundwater well and is equal to the elevation of the water surface in the well. This term is typically not used in reference to confined aquifers or aquifers under pressure. Also known as the groundwater table, groundwater surface, water level, and saturated surface, among others.

Watershed: The area of land, bounded by a divide, that drains water, sediment, and dissolved materials to a common outlet at some point along a stream channel (Dunne and Leopold 1978), or to a lake, reservoir, or other body of water. Also called drainage basin or catchment.

West Nile Virus: A virus that is found in temperate and tropical regions of the world and most commonly transmitted by mosquitoes. West Nile virus can cause flu-like symptoms in humans and can be lethal to birds, including GRSG.

Wetlands: Those areas that are inundated by surface water or groundwater with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mudflats, and natural ponds.

Wild Horse Herd Management Area: Areas established by the Authorized Officer for the maintenance of wild horse and burro herds. Herd management areas are established in consideration of the appropriate management level for the herd, the habitat requirements of the animals, the relationships with other uses of the public and adjacent private lands, and the constraints contained in 43 CFR 4710.4.

Wild, Scenic, or Recreational River Areas: The three classes of what is traditionally referred to as a "wild and scenic river." Designated river segments are classified as wild, scenic, and/or recreational, but the segments cannot overlap.

- **Wild River Areas:** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- **Scenic River Areas:** Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- **Recreational River Areas:** Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Wildcat Well: A well drilled in an area where oil and gas have not been previously discovered.

Wilderness: A congressionally designated area defined by the Wilderness Act of 1964, 16 USC §1131(a), as undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

Wilderness Characteristics: These attributes include the area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include supplemental values. Lands with wilderness characteristics are those lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in section 2(c) of the Wilderness Act.

Wilderness Study Area (WSA): A roadless area that has been inventoried and found to be wilderness in character, has few human developments, and provides outstanding opportunities for solitude and primitive recreation, as described in Section 603 of the Federal Land Policy and Management Act of 1976 and in Section 2(c) of the Wilderness Act of l964. "A Wilderness...(1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired

condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." When these characteristics were found within a defined boundary, the presence of the wilderness resource was documented and the area was classified as a WSA (BLM Manual 6330).

Wildfire Suppression: An appropriate management response to wildfire, escaped wildland fire use, or prescribed fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire.

Wildland Fire: An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out. (National Wildfire Coordinating Group October 2014, http://www.nwcg.gov/pms/pubs/glossary/w.htm).

Wildland Urban Interface (WUI): Healthy Forest Recreation Act 2003: defines wildland urban interface (WUI) (section 101) as an area within or adjacent to an at risk community that has been identified by a community in its wildfire protection plan or, for areas that do not have such a plan, an area extending; (1) ½ mile from the boundary of an at risk community, or (2) 1 ½ miles when other criteria are met. (e.g., a sustained steep slope or a geographic feature aiding in creating an effective fire break or is condition class III land, or (3) is adjacent to an evacuation route.

Wildlife Services (WS): A division of the USDA Animal and Plant Health Inspection Service (APHIS) that is responsible for the control of animals that are causing economic losses to agriculture, damage to property, or hazards to human health. (See also Animal Damage Control.)

Winter Concentration Areas: During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds. Suitable winter habitat requires sagebrush above snow. Sage-grouse tend to select wintering sites where sagebrush is 10-14 inches above the snow. Sagebrush canopy cover utilized by sage-grouse above the snow may range from 10 to 30 percent. Foraging areas tend to be on flat to generally southwest facing slopes or on ridges where sagebrush height may be less than 10 inches but the snow is routinely blown clear by wind. When these conditions are met, sage-grouse typically gain weight over winter. In most cases winter is not considered limiting to sage-grouse. Under severe winter conditions grouse will often be restricted to tall stands of sagebrush often located on deeper soils in or near drainage basins. Under these conditions winter habitat may be limiting. On a landscape scale, winter habitats should allow sage-grouse access to sagebrush under all snow conditions.

Large numbers of sage-grouse have been documented to persistently use some specific areas which are characterized by the habitat features outlined above. These areas should be delineated as "winter concentration areas." Winter concentration areas do not include all winter habitats used by sage-grouse, nor are they limited to narrowly defined "severe winter relief" habitats. Delineation of these concentration areas is based on determination of the presence of winter habitat characteristics confirmed by repeated observations and sign of large numbers of sage-grouse. The definition of "large" is dependent on whether the overall population is large or small. In core population areas frequent observations of groups of 50+ sage-grouse meet the definition while in marginal populations group size may be 25+. Consultation and coordination with the WGFD is required when delineating winter concentration areas.

Withdrawal: Withholding an area of federal land from settlement, sale, location, or entry under some or all of the general land laws for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of federal land, other than *property* governed by the Federal Property and Administrative Services Act (40 USC 472), from one department, bureau, or agency to another department, bureau, or agency.

Wyoming Connectivity Areas: Condition in which the spatial arrangement of land cover types allows organisms and ecological processes (such as disturbance) to move across the landscape preventing population isolation. These connectivity areas could provide linkage within a state's sub-populations or between interstate sub populations.

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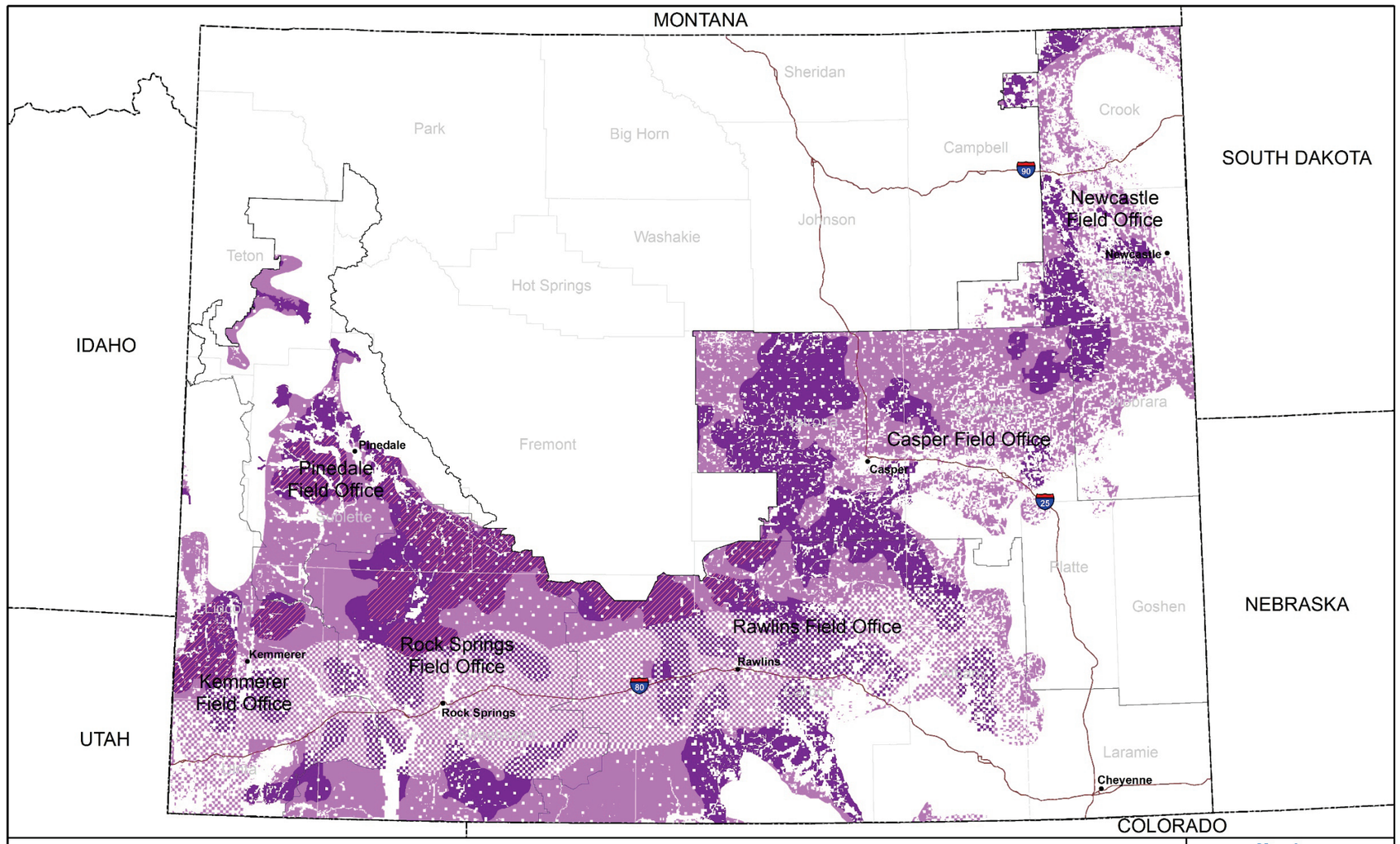
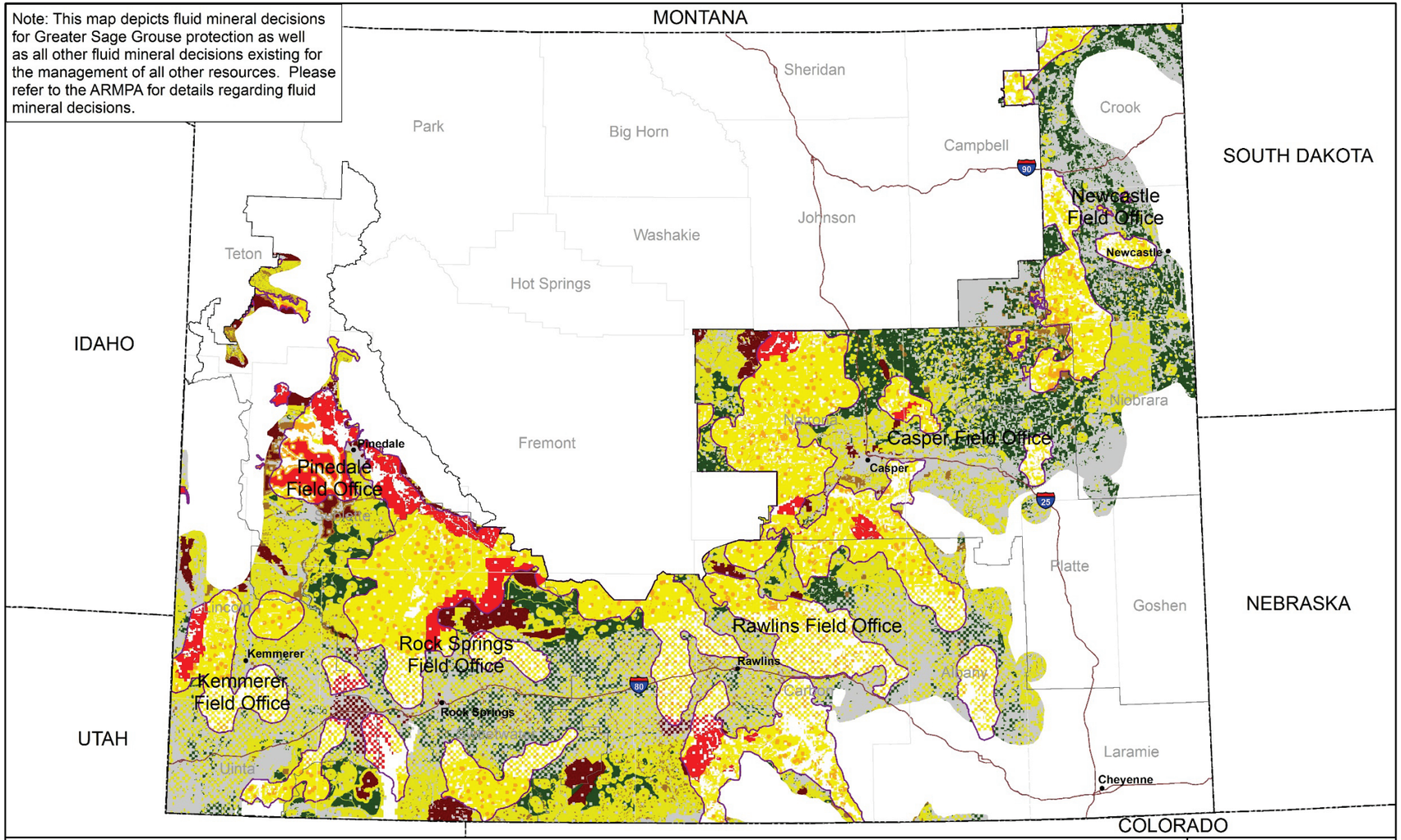
Appendices

Appendix A – Approved RMP Amendment Maps


MONTANA
SOUTH DAKOTA
NEBRASKA
COLORADO
UTAH
IDAHO
Sheridan
Crook
Park
Big Horn
Campbell
Johnson
Washakie
Teton
Hot Springs
Fremont
Converse
Niobrara
Platte
Goshen
Laramie
Lincoln
Newcastle Field Office
Newcastle
Casper Field Office
Casper
Pinedale Field Office
Pinedale
Rawlins Field Office
Rawlins
Rock Springs Field Office
Rock Springs
Kemmerer Field Office
Kemmerer
Cheyenne
90
25
80
Map 2-1: Wyoming Habitat Management Areas
Legend
Sagebrush Focal Areas (SFAs)
Priority Habitat Management Areas (PHMAs)
General Habitat Management Areas (GHMAs)
BLM Field Office Boundary
County Boundary
Planning Area Boundary
State Boundary
N
W
E
S
Miles
0 10 20 40 60
September 2015
No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.
Map Area
WA
MT
ND
OR
ID
WY
SD
NV
NE
UT
CO
CA
KS
AZ
NM
TX
OK

Note: This map depicts fluid mineral decisions for Greater Sage Grouse protection as well as all other fluid mineral decisions existing for the management of all other resources. Please refer to the ARMPA for details regarding fluid mineral decisions.



Map 2-2: Wyoming Fluid Minerals (Oil and Gas)

PHMA	GHMA	
		Outside of BLM Decision Area
		Closed
		Open w/ Major Stipulations (NSO)
		Open w/ Moderate Stipulations (CSU and/or TL)
		Open w/ Standard Stipulations

- BLM Field Office Boundary
- County Boundary
- Planning Area Boundary
- State Boundary

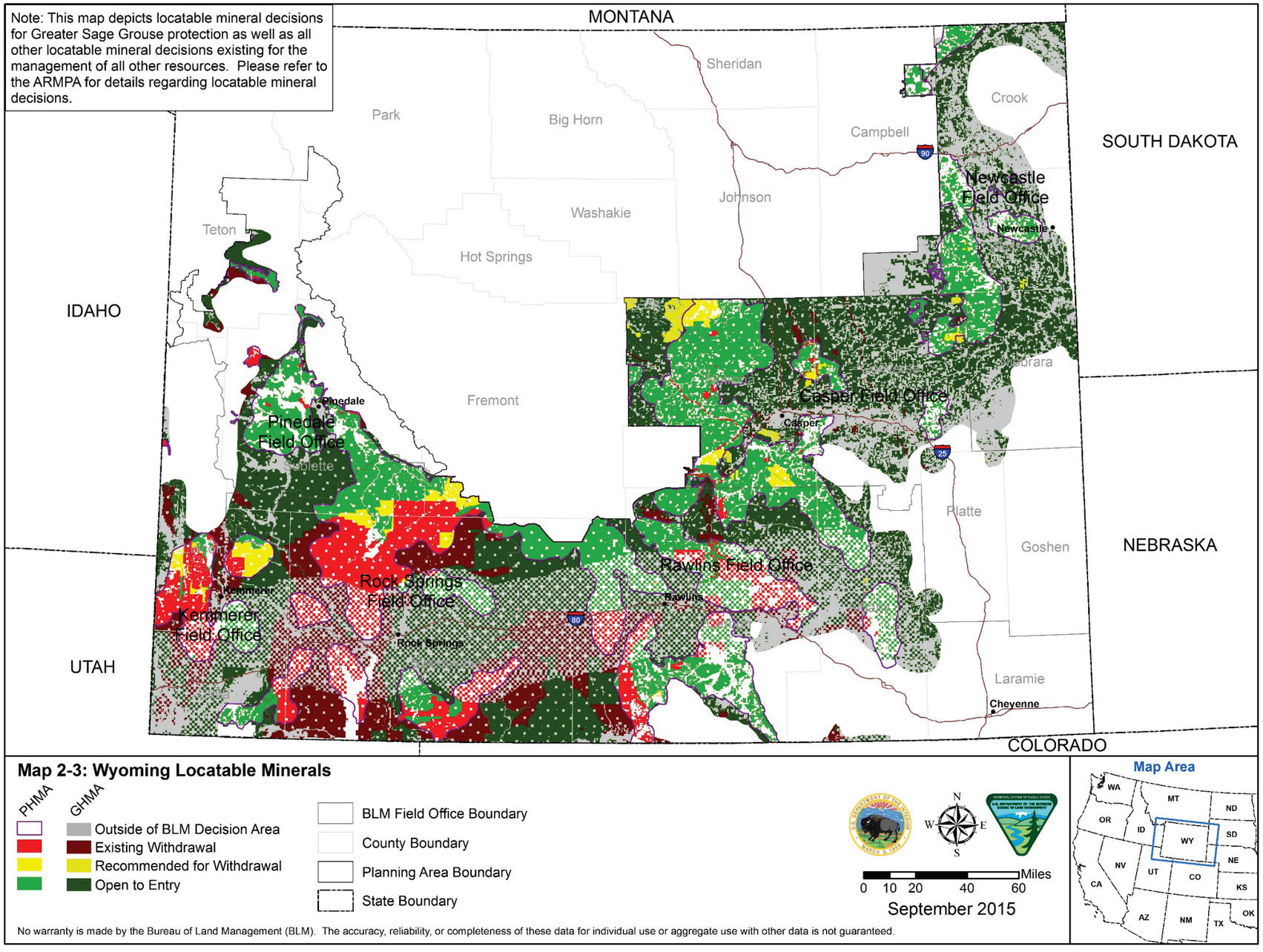
N W E S

0 10 20 40 60 Miles

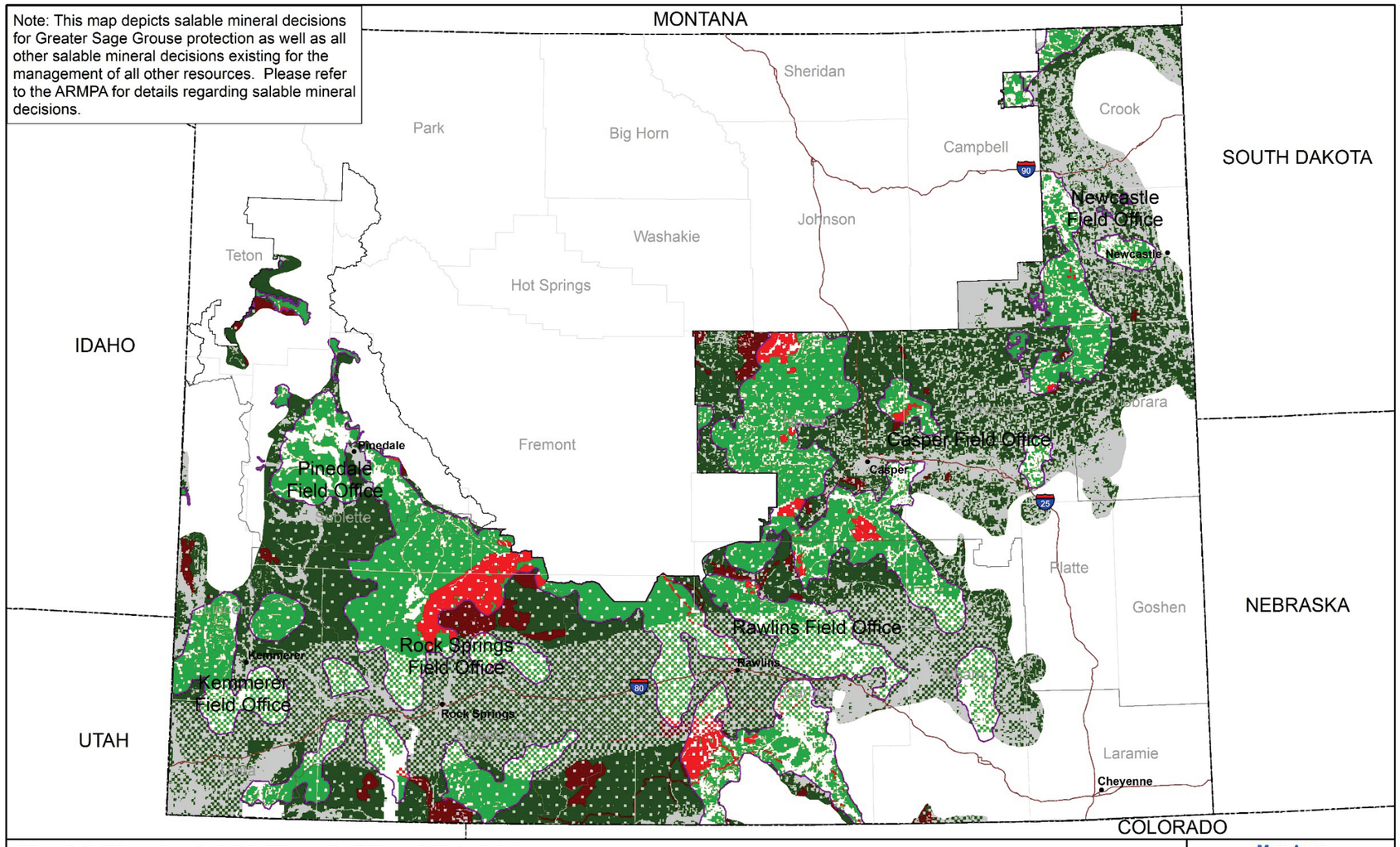
September 2015

Map Area

No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.


Note: This map depicts locatable mineral decisions for Greater Sage Grouse protection as well as all other locatable mineral decisions existing for the management of all other resources. Please refer to the ARMPA for details regarding locatable mineral decisions.
MONTANA
SOUTH DAKOTA
NEBRASKA
COLORADO
UTAH
IDAHO
Sheridan
Crook
Park
Big Horn
Campbell
Johnson
Washakie
Teton
Hot Springs
Fremont
Platte
Goshen
Laramie
Cheyenne
Newcastle
Newcastle Field Office
Casper
Casper Field Office
Pinedale
Pinedale Field Office
Rawlins
Rawlins Field Office
Rock Springs
Rock Springs Field Office
Kemmerer
Kemmerer Field Office
Map 2-3: Wyoming Locatable Minerals
PHMA
GHMA
Outside of BLM Decision Area
Existing Withdrawal
Recommended for Withdrawal
Open to Entry
BLM Field Office Boundary
County Boundary
Planning Area Boundary
State Boundary
N
W
E
S
0 10 20 40 60
Miles
September 2015
Map Area
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Note: This map depicts salable mineral decisions for Greater Sage Grouse protection as well as all other salable mineral decisions existing for the management of all other resources. Please refer to the ARMPA for details regarding salable mineral decisions.



Map 2-4: Wyoming Salable Minerals (Mineral Materials)

PHMA GHMA

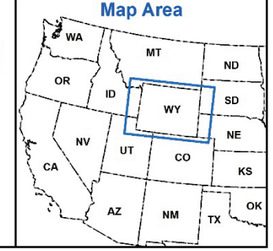
- Outside of BLM Decision Area
- Closed to Mineral Material Disposal
- Open to Mineral Material Disposal
- BLM Field Office Boundary
- County Boundary
- Planning Area Boundary
- State Boundary

N W E S

0 10 20 40 60 Miles

September 2015

Map Area



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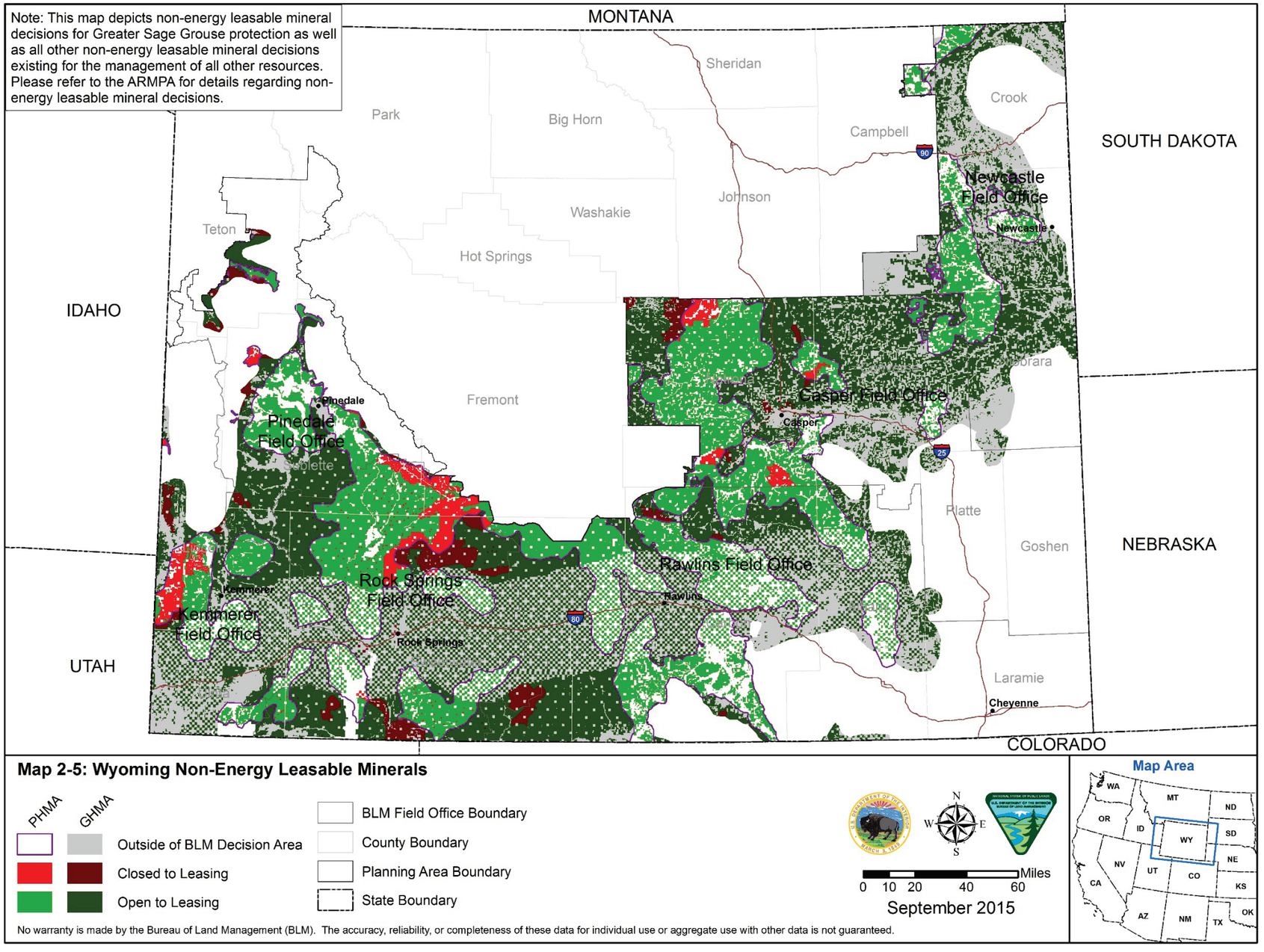
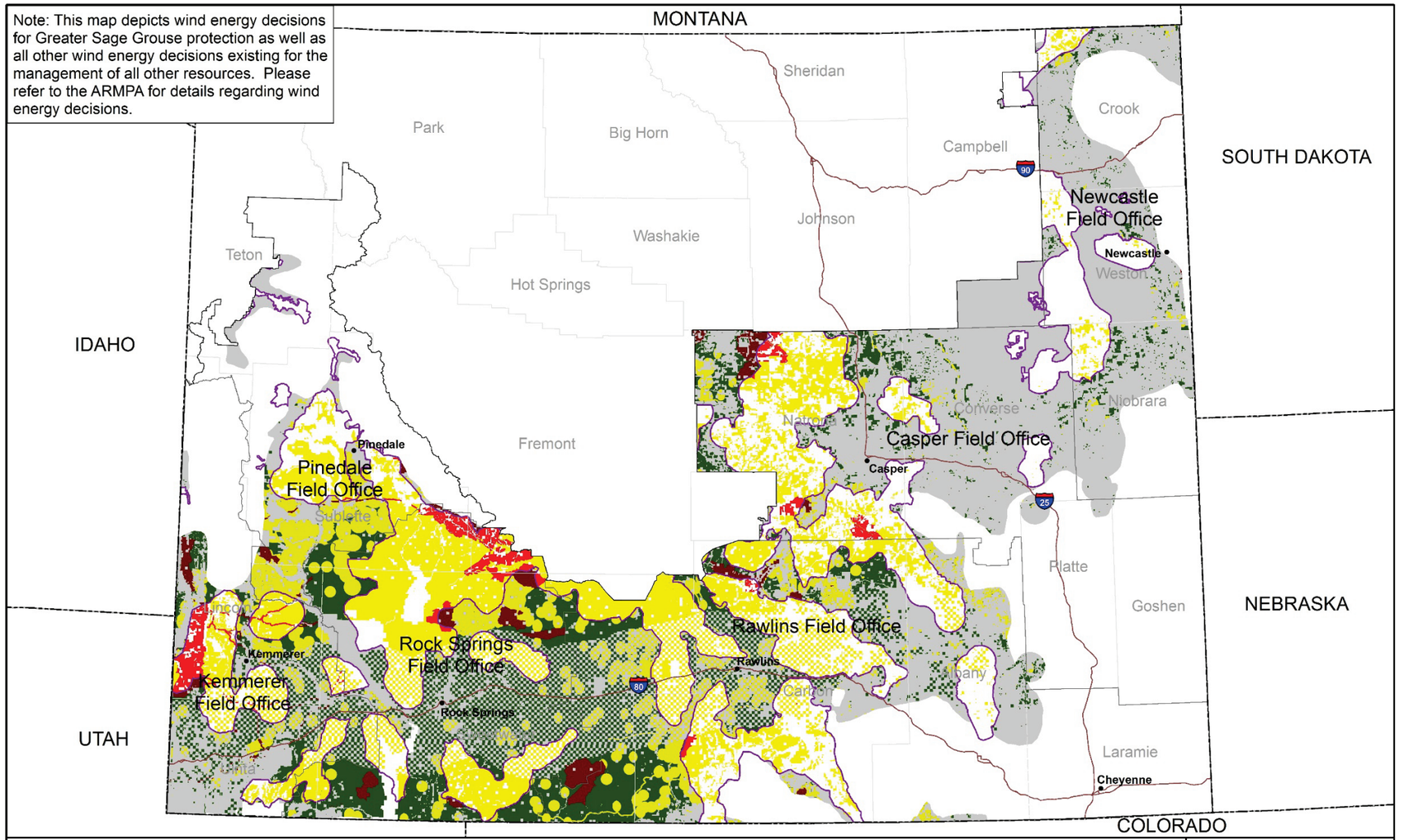


No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.

Note: This map depicts wind energy decisions for Greater Sage Grouse protection as well as all other wind energy decisions existing for the management of all other resources. Please refer to the ARMPA for details regarding wind energy decisions.



Map 2-6: Wyoming Wind Energy

PHMA / GHMA

- Outside of BLM Decision Area
- Wind Energy Exclusion Zone
- Wind Energy Avoidance Zone
- Open to Wind Energy

- BLM Field Office Boundary
- County Boundary
- Planning Area Boundary
- State Boundary

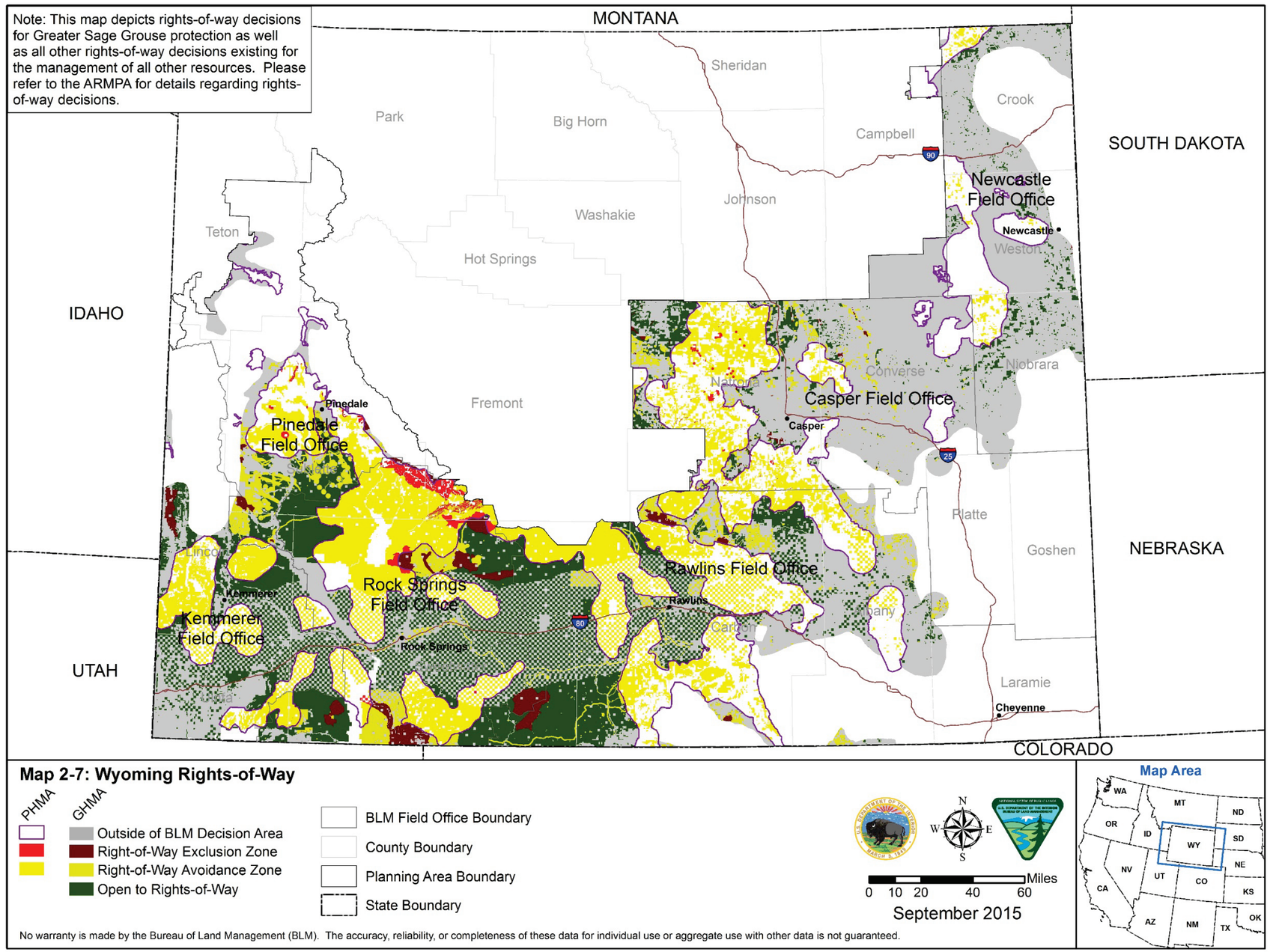
N W E S

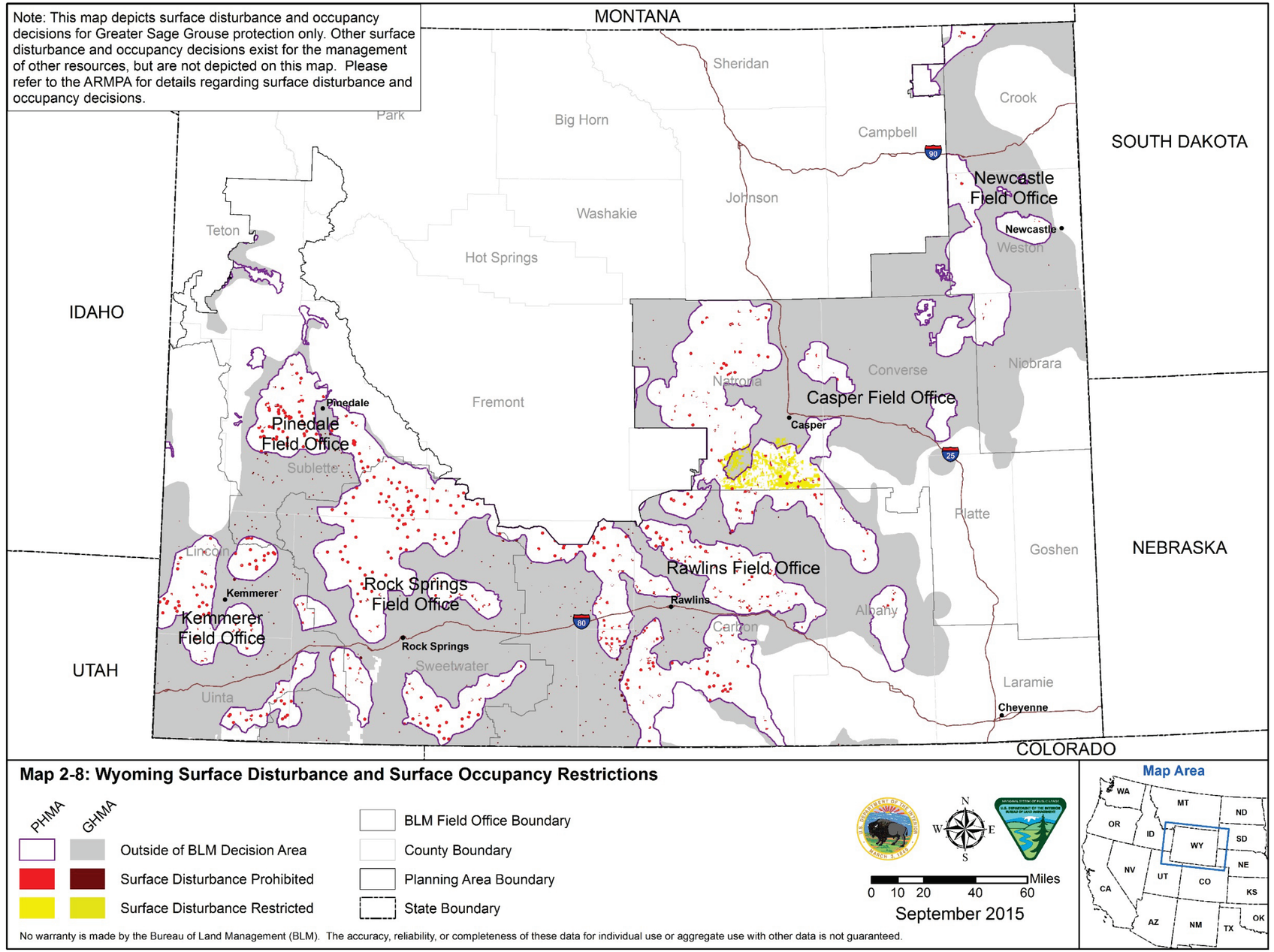
0 10 20 40 60 Miles

September 2015

Map Area

No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.


Note: This map depicts rights-of-way decisions for Greater Sage Grouse protection as well as all other rights-of-way decisions existing for the management of all other resources. Please refer to the ARMPA for details regarding rights-of-way decisions.
MONTANA
SOUTH DAKOTA
NEBRASKA
COLORADO
UTAH
IDAHO
Sheridan
Crook
Park
Big Horn
Campbell
Johnson
Washakie
Teton
Hot Springs
Fremont
Natrona
Converse
Niobrara
Platte
Goshen
Albany
Laramie
Lincoln
Carbon
Newcastle Field Office
Newcastle
Weston
Casper Field Office
Casper
Pinedale Field Office
Pinedale
Rock Springs Field Office
Rock Springs
Kemmerer Field Office
Kemmerer
Rawlins Field Office
Rawlins
Cheyenne
Map 2-7: Wyoming Rights-of-Way
PHMA
GHMA
Outside of BLM Decision Area
Right-of-Way Exclusion Zone
Right-of-Way Avoidance Zone
Open to Rights-of-Way
BLM Field Office Boundary
County Boundary
Planning Area Boundary
State Boundary
N
W
E
S
0 10 20 40 60
Miles
September 2015
Map Area
WA
MT
ND
OR
ID
WY
SD
NV
UT
CO
NE
CA
KS
AZ
NM
TX
OK
No warranty is made by the Bureau of Land Management (BLM). The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.


Note: This map depicts surface disturbance and occupancy decisions for Greater Sage Grouse protection only. Other surface disturbance and occupancy decisions exist for the management of other resources, but are not depicted on this map. Please refer to the ARMPA for details regarding surface disturbance and occupancy decisions.
MONTANA
SOUTH DAKOTA
NEBRASKA
COLORADO
UTAH
IDAHO
Sheridan
Crook
Park
Big Horn
Campbell
Johnson
Washakie
Teton
Hot Springs
Weston
Natrona
Converse
Niobrara
Fremont
Pinedale
Pinedale Field Office
Casper
Casper Field Office
Sublette
Platte
Goshen
Lincoln
Kemmerer
Rock Springs Field Office
Rawlins Field Office
Rawlins
Kemmerer Field Office
Albany
Carbon
Rock Springs
Sweetwater
Laramie
Uinta
Cheyenne
Newcastle
Newcastle Field Office
Map 2-8: Wyoming Surface Disturbance and Surface Occupancy Restrictions
PHMA
GHMA
Outside of BLM Decision Area
Surface Disturbance Prohibited
Surface Disturbance Restricted
BLM Field Office Boundary
County Boundary
Planning Area Boundary
State Boundary
N
W
E
S
0 10 20 40 60
Miles
September 2015
Map Area
WA
MT
ND
OR
ID
WY
SD
NV
UT
CO
NE
CA
KS
AZ
NM
TX
OK
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Appendix C – Required Design Features

Introduction

The following conservation measures have typically been referred to as best management practices (BMP) or recommended management practices. These conservation measures are treated in the Resource Management Plan (RMP) as required design features (RDF) to ensure regulatory certainty and the conservation of GRSG. The source of these conservation measures came from Washington Office Instruction Memorandum No. 2012-044, (12/27/2011) Bureau of Land Management (BLM) National Greater Sage-Grouse Land Use Planning Strategy (IM No. WO-2012-044).

RDFs are required for certain activities in GRSG habitat. RDFs establish the minimum specifications for certain activities to help mitigate adverse impacts. However, the applicability and overall effectiveness of each RDF cannot be fully assessed until the project level when the project location and design are known. Because of site-specific circumstances, some RDFs may not apply to some projects (e.g., a resource is not present on a given site) and/or may require slight variations (e.g., a larger or smaller protective area). All variations in RDFs would require that at least one of the following be demonstrated in the National Environmental Policy Act of 1969 (NEPA) analysis associated with the project/activity:

- A specific RDF is documented to not be applicable to the site-specific conditions of the project/activity (e.g., due to site limitations or engineering considerations). Economic considerations, such as increased costs, do not necessarily require that an RDF be varied or rendered inapplicable.

- An alternative RDF, a state-implemented conservation measure, or plan-level protection is determined to provide equal or better protection for GRSG or its habitat. A specific RDF will provide no additional protection to GRSG or its habitat.

- Through the coal planning process it will be determined if areas are suitable for further coal leasing consideration. Sage-grouse will be protected from leasing using the coal screening process (unsuitability criteria #15 or multiple use conflict analysis (screen 3)). The coal planning process (see 43 CFR 3420.1-4 and 43 CFR 3461) will identify areas where coal leasing is not suitable or acceptable and those areas will be removed from further coal consideration for coal leasing and development (i.e., they will not be leased, so no development and no further protection needed).

Mines (particularly large surface coal mines) do not have the flexibility to move operations, so it is assumed that if a lease is ultimately offered, sold, and issued, the federal coal lessee can use the entire coal lease for mining operations once they receive their federal permit. The following measures would be applied as RDFs for all solid minerals. The measures would also apply to locatable minerals subject to valid existing rights and consistent with applicable law.

Required Design Features for Lands and Realty, Range Management, Fluid Minerals, Coal Exploration, Wild Horses, Travel Management, Vegetation Management, Wildfire and Fuels Management, Noise, and West Nile Virus

Priority Habitats—RDFs/BMPs are continuously improving as new science and technology become available and therefore are subject to change. Include from the following RDFs/BMPs those that are appropriate to mitigate effects from the approved action.

Evaluate and take advantage of opportunities to remove or modify existing power lines within priority sage-grouse habitat areas. When possible, require perch deterrents on existing or new overhead facilities. Encourage installation of perch deterrents on existing facilities.

Where existing leases or rights-of-way (ROW) have had some level of development (road, fence, well, etc.) and are no longer in use, reclaim the site by removing these features and restoring the habitat.

Locate man camps outside priority sage-grouse habitats.

Work cooperatively with permittees, lessees, and other landowners to develop grazing management strategies that integrate both public and private lands into single management units.

Coordinate RDFs/BMPs and vegetative objectives with the Natural Resources Conservation Service (NRCS) for consistent application across jurisdictions where the BLM and NRCS have the greatest opportunities to benefit GRSG, particularly as it applies to the NRCS's National Sage-Grouse Initiative (http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/farmbill/initiatives/andcid=steldevb1027671).

Evaluate the role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to priority sage-grouse habitats to determine if they should be restored to sagebrush or habitat of higher quality for sage-grouse. If these seedings are part of an Allotment Management Plan/Conservation Plan, or if they provide value in conserving or enhancing the rest of the priority habitats, then no restoration would be necessary. Assess the compatibility of these seedings for sage-grouse habitat or as a component of a grazing system during land health assessments (Davies et al. 2011). For example, some introduced grass seedings are an integral part of a livestock management plan and reduce grazing pressure in important sagebrush habitats, or serve as a strategic fuels management area.

Where the federal government owns the surface, and the mineral estate is in non-federal ownership, apply appropriate BMPs to surface development.

Roads

Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.

Locate roads to avoid important areas and habitats.

Coordinate road construction and use among federal fluid mineral lessees and ROW or special use authorization (SUA) holders.

Construct road crossings of ephemeral, intermittent, and perennial streams to minimize impacts to the riparian habitat, such as by crossing at right angles to ephemeral drainages and stream crossings.

Establish slow speed limits on BLM-administered roads or design roads for slower vehicle speeds to reduce sage-grouse mortality.

Establish trip restrictions (Lyon and Anderson 2003) or minimization through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition).

Do not issue ROWs or SUAs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions including this document.

Designate all newly constructed routes for authorized use only (using signage, gates, etc.).

Apply dust abatement on roads, well pads, and other surface disturbances.

Close and rehabilitate duplicate roads by restoring original landform and establishing desirable habitat conditions.

Operations

Conduct reclamation on unused roads as soon as possible using appropriate sage-grouse seed mixes.

Reclaim the permitted ROWs used in the construction of the running surface immediately.

Site and/or minimize linear ROWs or SUAs to reduce disturbance and fragmentation of sagebrush habitats.

Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors.

Bury distribution power lines to the extent technically feasible.

Cover all fluid-containing pits and open tanks with netting (maximum 1.5-inch mesh size) regardless of size to reduce sage-grouse mortality.

Equip tanks and other above-ground facilities with structures or devices that discourage nesting and perching of raptors and corvids.

Control the spread and effects of invasive non-native plant species (Evangelista et al. 2011), including treating weeds prior to surface disturbance and washing vehicles and equipment at designated wash stations when constructing in areas with weed infestations.

Require sage-grouse-safe fences (Christiansen, T. 2009; Stevens, B.S. 2011).

Clean up refuse (Bui et al. 2010).

Eliminate sumps; if the sump is absolutely necessary, then construct sage-grouse-safe fences around the sump (Christiansen, T. 2009; Stevens, B.S. 2011).

Cluster disturbances, operations (hydraulic fracture stimulation, liquids gathering, etc.), and facilities. If the geology is exploratory and there is the potential that subsequent wells may not be drilled, do not disturb additional habitat until geology has proven additional wells can go on the pad and it is necessary to do so.

Use directional and horizontal drilling to the extent feasible as a means to reduce surface disturbance in relation to the number of wells.

Place infrastructure in already disturbed locations where the habitat has not been fully restored.

Apply a phased development approach with concurrent reclamation.

Place liquid gathering facilities outside priority areas. To reduce truck traffic and perching and nesting sites for ravens and raptors, do not place tanks at well locations within priority habitat areas.

Pipelines must be under or immediately adjacent to the road (Bui et al. 2010).

Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use (Lyon and Anderson 2003).

Restrict the construction of tall facilities, distribution power lines, and fences to the minimum number and amount needed.

Design or site permanent structures to minimize impacts to sage-grouse, with emphasis on locating and operating facilities that create movement (e.g., pump jacks) or attract frequent human use and vehicular traffic (e.g., fluid storage tanks) in a manner that will minimize disturbance of sage-grouse or interference with habitat use.

Use only closed-loop systems for drilling operations, with no reserve pits.

Consider using oak (or other material) mats for drilling activities where topography permits to reduce vegetation disturbance and for temporary roads between closely spaced wells to reduce soil compaction and maintain soil structure to increase likelihood of vegetation reestablishment following drilling.

West Nile Virus

Artificial water impoundments will be managed for the prevention and/or spread of West Nile virus where the virus poses a threat to sage-grouse. This may include but is not limited to: (a) the use of larvicides and adulticides to treat waterbodies; (b) overbuilding ponds to create non-vegetated, muddy shorelines; (c) building steep shorelines to reduce shallow water and emergent aquatic vegetation; (d) maintaining the water level below rooted vegetation; (e) avoiding flooding terrestrial vegetation in flat terrain or low-lying areas; (f) constructing dams or impoundments that restrict seepage or overflow; (g) lining the channel where discharge water flows into the pond with crushed rock, or use a horizontal pipe to discharge inflow directly into existing open water; (h) lining the overflow spillway with crushed rock and construct the spillway with steep sides to preclude the accumulation of shallow water and vegetation; and (i) restricting access of ponds to livestock and wildlife (Doherty 2007). This does not apply to naturally occurring waters.

Field offices should consider alternative means to manage produced waters that could present additional vectors for West Nile virus. Such remedies may include re-injection under an approved Underground Injection Control permit, transfer to single/centralized facility, etc.

Water impoundments will be managed to prevent the spread of West Nile virus where analysis shows the virus poses a threat to sage-grouse and in consideration of potential negative impact to other species of concern.

Restrict pit and impoundment construction to reduce or eliminate threats from West Nile virus (Doherty 2007).

Noise

Limit noise to less than 10 decibels above ambient measures (20-24 dBA) at sunrise at the perimeter of a lek during active lek season (Patricelli et al. 2010, Blickley et al. 2012).

Require noise shields when drilling during the lek, nesting, brood-rearing, or wintering season.

Locate new compressor stations outside priority habitats and design them to reduce noise that may be directed towards priority habitat.

Reclamation

Include objectives for ensuring habitat restoration to meet sage-grouse habitat needs in reclamation practices/sites (Pyke 2011). Address post-reclamation management in reclamation plan such that goals and objectives are to protect and improve sage-grouse habitat needs.

Maximize the area of interim reclamation on long-term access roads and well pads, including reshaping, topsoiling, and revegetating cut-and-fill slopes where practicable; material used for irrigation must be removed thereafter.

Restore disturbed areas at final reclamation to the pre-disturbance landforms and desired plant community.

Implement irrigation during interim or final reclamation for sites where establishment of seedlings has been shown or is expected to be difficult due to dry conditions.

Use mulching, soil amendments, and/or erosion blankets to expedite reclamation and to protect soils.

Identify and work with partners to increase native seed availability and work with plant material centers to develop new plant materials, especially the forbs needed to restore sage-grouse habitat.

Consider potential changes in climate (Miller at al. 2011) when proposing seedings using native plants. Consider seed collections from the warmer component within a species' current range for selection of native seed (Kramer and Havens 2009).

Use Ecological Site Descriptions (ESD) or other protocols (e.g., Terrestrial Ecological Unit Inventory or Lands System Inventory) to identify the understory species and sagebrush subspecies needed to restore desirable habitat conditions.

Vegetation Treatments/Fire and Fuels Management

During vegetation management project design, consider the utility of using livestock to strategically reduce fine fuels (Diamond et al. 2009), and implement grazing management that will accomplish this objective (Davies et al. 2011, Launchbaugh et al. 2007). Consult with ecologists to minimize impacts to native perennial grasses.

Provide planning vegetation treatments information to personnel on sage-grouse biology, habitat requirements, and identification of areas utilized locally.

Use vegetation treatment prescriptions that minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable plant species and reduce risk of hydrophobicity).

Ensure that treatments are configured in a manner (e.g., strips) that promotes use by sage-grouse (See Connelly et al. 2000).

Design vegetation treatments in areas of high fire frequency which facilitate firefighter safety, reduce the potential acres burned and the fire risk to sage-grouse habitat. Additionally, develop maps for sage-grouse habitat which spatially display existing fuels treatments that can be used to assist suppression activities.

Restore prior perennial grass/shrub plant communities infested with invasive species to a species composition characterized by perennial grasses, forbs, and shrubs as outlined in ESDs.

Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

Reduce the risk of vehicle or human-caused wildfires and the spread of invasive species into sage-grouse habitats. This could be minimized by planting perennial vegetation (e.g., green-strips) paralleling road ROWs. (This RDF could be applied to BLM linear ROW authorizations.)

Strategically place and maintain pre-treated strips/areas (e.g., mowing, herbicide application, and strictly managed grazed strips) to aid in controlling wildfire, should wildfire occur near key habitats or important restoration areas (such as where investments in restoration have already been made).

As appropriate, utilize existing fuel breaks, such as roads or discrete changes in fuel type, as control lines to minimize fire spread.

Design vegetation treatments in sage-grouse habitats to strategically reduce wildfire threats in the greatest area. This may involve spatially arranging new vegetation treatments with past treatments, vegetation with fire-resistant serial stages, natural barriers, and roads in order to constrain fire spread and growth. This may require vegetation treatments to be implemented in a more linear versus block design (Launchbaugh et al. 2007).

Design post-Emergency Stabilization and Rehabilitation (ES&R) and Burn Area Emergency Rehabilitation (BAER) management to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horses, travel management, etc., to achieve and maintain the desired condition of ES&R and BAER projects to benefit sage-grouse (Eiswerth and Shonkwiler 2006). Include sage-grouse habitat parameters as defined by Connelly et al. (2000), Hagen et al. (2007) or if available, state sage-grouse conservation plans and appropriate local information in habitat restoration objectives. Maintain these objectives, within priority sage-grouse habitat areas, as a high restoration priority.

Make reestablishment of sagebrush and desirable understory plant cover (relative to ecological site potential) a high priority for restoration efforts. Write specific vegetation objectives to reestablish sagebrush cover and desirable understory cover.

Where applicable, design fuels treatment objective to protect existing sagebrush ecosystems, modify fire behavior, restore native plants, and create landscape patterns which most benefit sage-grouse habitat.

Provide training to fuels treatment personnel on sage-grouse biology, habitat requirements, and identification of areas utilized locally.

Use burning prescriptions which minimize undesirable effects on vegetation or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of annual grass invasion).

Ensure proposed sagebrush treatments are planned with full interdisciplinary input from the BLM (pursuant to NEPA) and coordination with state fish and wildlife agencies, and that treatment acreage is conservative in the context of surrounding sage-grouse seasonal habitats and landscape.

Power-wash all vehicles and equipment involved in vegetation treatment and fuels management activities prior to entering the area to minimize the introduction of undesirable and/or invasive plant species.

Give priority for implementing specific sage-grouse habitat restoration projects in annual grasslands, first to sites which are adjacent to or surrounded by priority/core habitat or that reestablish continuity between priority habitats. Annual grasslands are a second priority for restoration when the sites are not adjacent to priority/core habitat but within two miles of priority/core habitat. The third priority for annual grassland habitat restoration projects is sites beyond two miles of priority/core habitat. The intent is to focus restoration outward from existing, intact habitat.

As funding and logistics permit, restore annual grasslands to a species composition characterized by perennial grasses, forbs, and shrubs or one of those referenced in land use planning documentation.

Emphasize the use of native plant species, recognizing that non-native species may be necessary depending on the availability of native seed and prevailing site conditions.

Remove standing and encroaching trees within at least 110 yards of occupied sage-grouse leks and other habitats (e.g., nesting, wintering, and brood rearing) to reduce the availability of perch sites for avian predators, as resources permit.

Design fuel treatments that would increase fire suppression efficiencies to protect wildland areas from wildfire originating on private lands, infrastructure corridors, and recreational areas. Where applicable, incorporate roads and natural fuel breaks into fuel break design.

Develop state-specific sage-grouse reference information and resource materials containing maps, a list of resource advisors, contact information, local guidance, and other information relevant to agency administrators and fire suppression resources.

During periods of multiple fires, ensure line officers are involved in setting priorities.

Provide localized maps to dispatch offices and extended attack incident commanders for use in prioritizing wildfire suppression resources and designing suppression tactics.

Assign a resource advisor with sage-grouse expertise or who has access to sage-grouse expertise to all extended attack fires in or near sage-grouse habitat. Prior to the fire season, provide training to sage-grouse resource advisors on wildfire suppression organization, objectives, tactics, and procedures to develop a cadre of qualified individuals. Involve state wildlife agency expertise in fire operations through the following:

Instructing resource advisors during preseason trainings

Qualification as resource advisors

Coordination with resource advisors during fire incidents

Contributing to incident planning with information such as habitat features or other key data useful in fire decisionmaking.

On critical fire weather days, pre-position additional fire suppression resources to optimize a quick and efficient response in sage-grouse habitat areas.

Locate wildfire suppression facilities (i.e., base camps, spike camps, drop points, staging areas and heli-bases) in areas where physical disturbance to sage-grouse habitat can be minimized. These include disturbed areas, grasslands, near roads/trails, or other areas where there is existing disturbance or minimal sagebrush cover.

Minimize unnecessary cross-country vehicle travel during fire operations in sage-grouse habitat.

Minimize burnout operations in key sage-grouse habitat areas by constructing a direct fire line whenever safe and practical to do so.

Utilize retardant, mechanized equipment, and other available resources to minimize burned acreage during initial attack.

As safety allows, conduct mop-up where the black adjoins unburned islands, dog legs, or other habitat features to minimize sagebrush loss.

Adequately document the fire operation activities in sage-grouse habitat for potential follow-up coordination activities.

Compile the District-level information into state-wide sage-grouse tool boxes. Tool boxes will contain maps, listing of resource advisors, contact information, local guidance, and other relevant information for each District, which will be aggregated into a state-wide document.

General Greater Sage-Grouse Habitat

Best Management Practices

Make applicable BMPs mandatory as Conditions of Approval within general sage-grouse habitat. BMPs are continuously improving as new science and technology become available and therefore are subject to change. At a minimum include the following BMPs:

Roads

- Design roads to an appropriate standard, no higher than necessary, to accommodate their intended purpose.
- Do not issue ROWs to counties on energy development roads, unless for a temporary use consistent with all other terms and conditions included in this document.
- Establish speed limits to reduce vehicle/wildlife collisions or design roads to be driven at slower speeds.
- Coordinate road construction and use among ROW holders.
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Use dust abatement practices on roads and pads.
- Close and reclaim duplicate roads by restoring original landform and establishing desired vegetation.

Operations

- Cluster disturbances, operations (fracture stimulation, liquids gathering, etc.), and facilities.
- Use directional and horizontal drilling to reduce surface disturbance.
- Clean up refuse (Bui et al. 2010).
- Restrict the construction of tall facilities and fences to the minimum number needed.
- Cover (e.g., fine mesh netting or use other effective techniques) all drilling and production pits and tanks regardless of size to reduce sage-grouse mortality.
- Equip tanks and other above ground facilities with structures or devices that discourage nesting of raptors and corvids.
- Use remote monitoring techniques for production facilities and develop a plan to reduce the frequency of vehicle use.
- Control the spread and effects from non−native plant species. (e.g., by washing vehicles and equipment).
- Restrict pit and impoundment construction to reduce or eliminate augmenting threats from West Nile virus (Dougherty 2007).

Reclamation

Include restoration objectives to meet sage-grouse habitat needs in reclamation practices/sites (Pyke 2011). Address post-reclamation management in reclamation plan such that goals and objectives are to enhance or restore sage-grouse habitat.

Appendix B – Fluid Mineral Stipulations

Management Action: MD SSS 2	Stipulation Type: CSU
Density and disturbance inside Priority Habitat Management Areas (PHMA) (core only)	
Management Action Text	In PHMAs (core only), the density of disturbance of an energy or mining facility (Appendix D) will be limited to an average of one site per square mile (640 acres) within the DDCT, subject to valid existing rights. The one location and cumulative value of existing disturbances will not exceed 5 percent of suitable habitat of the DDCT area. Utilize the Greater Sage-Grouse density disturbance calculation tool as described in Appendix D.
Protected Resource	Greater Sage-Grouse designated core habitat
Acres Affected (Approx.)	6,975,822 acres BLM administration (BLM surface plus federal mineral interest regardless of surface ownership) 87,281 acres federal mineral estate within Forest Service proposed core management areas
Stipulation Description	**Stipulation**: Greater Sage-Grouse designated core areas. This area encompasses Greater Sage-Grouse designated PHMAs (Core only). Surface occupancy or use will be restricted to no more than an average of one disturbance location per 640 acres using the DDCT, and the cumulative value of all applicable surface disturbances, existing or future, must not exceed 5 percent of the DDCT area, as described in the Disturbance Density Calculation Tool (DDCT). This lease does not guarantee the lessee the right to occupy the surface of the lease for the purpose of producing oil and natural gas within Greater Sage-Grouse designated PHMAs (Core only). The surface occupancy restriction criteria identified in this stipulation may preclude surface occupancy and may be beyond the ability of the lessee to meet due to existing surface disturbance on federal, state, or private lands within designated PHMAs (Core only) or surface disturbance created by other land users. The BLM may require the lessee or operator to enter into a unit agreement or drilling easement to facilitate the equitable development of this and surrounding leases. **Purpose**: To protect Greater Sage-Grouse designated core areas from habitat fragmentation and loss. **Exception**: The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. **Modification**: The authorized officer may modify the area subject to the stipulation or surface occupancy criteria if an environmental record of review finds that a portion of the CSU area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. **Waiver**: No Waiver
Management Action: MD SSS 3	**Stipulation Type: CSU**
Density and disturbance inside PHMAs (connectivity only)	
Management Action Text	Inside PHMAs (connectivity only), all suitable habitat disturbed (any program area) will not exceed 5% of suitable habitat within the DDCT area using the DDCT process described in Appendix D.
Protected Resource	Greater Sage-Grouse connectivity habitat
Acres Affected	76,241 acres BLM administration (BLM surface plus federal mineral interests regardless of surface ownership)

(Approx.)	62,660 acres federal mineral estate within Forest Service proposed core management areas
Stipulation Description	**Stipulation**: Greater Sage-Grouse connectivity areas. This area encompasses Greater Sage-Grouse PHMAs (Connectivity only). The cumulative value of all applicable surface disturbances (existing or future, and not limited to fluid mineral disturbances) must not exceed an average of 5 percent of the sagebrush habitat mapped on the Field Office GIS database per 640 acres, as described in the Disturbance Density Calculation Tool (DDCT). This lease does not guarantee the lessee the right to occupy the surface of the lease for the purpose of producing oil and natural gas within Greater Sage-Grouse designated PHMAs (Connectivity Only). The surface occupancy restriction criteria identified in this stipulation may preclude surface occupancy and may be beyond the ability of the lessee to meet due to existing surface disturbance on federal, state, or private lands within the designated connectivity areas or surface disturbance created by other land users. The BLM may require the lessee or operator to enter into a unit agreement or drilling easement to facilitate the equitable development of this and surrounding leases. **Purpose**: To protect Greater Sage-Grouse connectivity areas from habitat fragmentation and loss. **Exception**: The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. An exception to the stated limits may be granted when compensatory mitigation is determined to provide an overall beneficial effect to sage-grouse habitat and populations. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. **Modification**: The authorized officer may modify the area subject to the stipulation or surface occupancy criteria if an environmental record of review finds that a portion of the CSU area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. **Waiver**: No Waiver
Management Action: MD SSS 5	**Stipulation Type: NSO**
Sage-grouse leks inside PHMAs	
Management Action Text	Sage-grouse leks inside PHMAs: Surface occupancy and surface disturbing activities will be prohibited on or within a 0.6 mile radius of the perimeter of occupied sage-grouse leks (Map 2-8). The Authorized Officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse
Protected Resource	Sage-grouse leks inside core and connectivity habitat areas
Acres Affected (Approx.)	420,424 acres BLM administration (BLM surface plus federal mineral interests regardless of surface ownership) 5,215 acres federal mineral estate within Forest Service proposed core management areas
Stipulation Description	**Stipulation:** Occupied Greater Sage-Grouse leks inside designated PHMAs (Core and Connectivity). This area encompasses occupied Greater Sage-Grouse leks inside designated PHMAs (Core and Connectivity). No surface occupancy or use is allowed within a six-tenths (0.6) mile radius of the perimeter of occupied Greater Sage-Grouse leks inside designated core areas and connectivity areas, as mapped on the Field Office GIS database.

	Purpose: To protect occupied Greater Sage-Grouse leks and associated seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse in proximity to leks, from habitat fragmentation and loss and Greater Sage-Grouse populations from disturbance inside designated core areas and connectivity areas. **Exception**: The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. **Modification**: The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. **Waiver**: This stipulation may be waived over the entire lease if, in coordination with the state wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the state wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)
Management Action: MD SSS 6	**Stipulation Type: NSO**
Sage-grouse leks outside PHMAs	
Management Action Text	Sage-grouse leks outside PHMAs: Surface occupancy and surface disturbing activities will be prohibited on or within a 0.25 mile radius of the perimeter of occupied sage-grouse leks (Map 2-8). The Authorized Officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse.
Protected Resource	Sage-grouse leks outside core and connectivity habitat areas
Acres Affected (Approx.)	32,369 acres BLM administration (BLM surface plus federal mineral interests regardless of surface ownership)
Stipulation Description	**Stipulation:** Occupied Greater Sage-Grouse leks outside PHMAs (Core and Connectivity). This area encompasses occupied Greater Sage-Grouse leks outside designated core areas and connectivity areas. No surface occupancy or use is allowed within a one-quarter (0.25) mile radius of the perimeter of occupied Greater Sage-Grouse leks outside designated PHMAs (Core and Connectivity), as mapped on the Field Office GIS database. **Purpose:** To protect occupied Greater Sage-Grouse leks, and associated seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse in proximity to leks, from habitat fragmentation and loss, and Greater Sage-Grouse populations from disturbance outside designated core areas and connectivity areas. **Exception**: The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse. The BLM can and does grant exceptions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. **Modification**: The authorized officer may modify the area subject to the stipulation or the NSO criteria if an environmental record of review finds that a portion of the NSO area is nonessential, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging

	activities, and nesting. **Waiver**: This stipulation may be waived over the entire lease if, in coordination with the state wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the state wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)
Management Action: MD SSS 7	**Stipulation Type: TLS**
Sage-grouse breeding, nesting, and early brood-rearing habitat inside PHMAs (core only)	
Management Action Text	Sage-grouse breeding, nesting, and early brood-rearing habitat inside PHMAs (core only): Surface disturbing and/or disruptive activities would be prohibited from March 15–June 30 to protect sage-grouse breeding, nesting, and early brood rearing habitat. This timing limitation would be applied throughout the PHMAs (core only). Activities in unsuitable habitats would be evaluated under the exception and modification criteria and could be allowed on a case by case basis. Where credible data support different timeframes for this seasonal restriction, dates may be expanded by up to 14 days prior to or subsequent to the above dates.
Protected Resource	Greater Sage-Grouse breeding, nesting and early brood-rearing habitat inside designated core areas
Acres Affected (Approx.)	2,956,428 acres BLM administration (BLM surface plus federal mineral interests regardless of surface ownership) 26,029 acres federal mineral estate within Forest Service proposed core management areas
Stipulation Description	**Stipulation:** Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats inside designated PHMAs (Core only). This area encompasses Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats inside designated PHMAs (Core only). No surface use is allowed during March 15 – June 30 inside designated PHMAs (Core only). Where credible data support different timeframes for this seasonal restriction, dates may be expanded by up to 14 days prior to or subsequent to the above dates. **Purpose:** To seasonally protect Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats from disruptive activities inside designated core areas. **Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. **Modification:** The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. **Waiver**: No Waiver
Management Action: MD SSS 8	**Stipulation Type: TLS**
Sage-grouse breeding, nesting, and early brood-rearing habitat inside PHMAs (connectivity only)	
Management Action Text	Sage-grouse breeding, nesting, and early brood-rearing habitat inside PHMAs (connectivity only): Surface disturbing and/or disruptive activities would be prohibited within PHMAs

	(connectivity only) from March 15–June 30 to protect breeding, nesting, and early brood-rearing habitats within 4 miles of the lek or lek perimeter of any occupied sage-grouse lek within identified PHMAs (connectivity only). This timing limitation would be applied throughout the PHMAs (connectivity only). Activities in unsuitable habitats would be evaluated under the exception and modification criteria and may be allowed on a case-by-case basis. Where credible data support different timeframes for this seasonal restriction, dates could be shifted by 14 days prior or subsequent to the above dates.
Protected Resource	Greater Sage-Grouse breeding, nesting and early brood-rearing habitat within connectivity areas
Acres Affected (Approx.)	31,886 acres BLM administration (BLM surface plus federal mineral interests regardless of surface ownership) 3,684 acres federal mineral estate within Forest Service proposed core management areas
Stipulation Description	**Stipulation:** Greater Sage-Grouse breeding, nesting, and early brood-rearing habitat within PHMAs (Connectivity only). This area encompasses Greater Sage-Grouse breeding, nesting, and early brood-rearing habitat within PHMAs (Connectivity only). No surface use is allowed during March 15 – June 30 in breeding, nesting, and early brood-rearing habitats (independent of habitat suitability) inside PHMAs (Connectivity only), within four miles of an occupied lek. **Purpose:** To seasonally protect Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats (independent of habitat suitability) inside connectivity areas from disruptive activities, within four miles of an occupied lek. **Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. **Modification:** The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. **Waiver**: This stipulation may be waived over the entire lease if, in coordination with the state wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the state wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)
Management Action: MD SSS 9	**Stipulation Type: TLS**
Sage-grouse breeding, nesting, and early brood-rearing habitat outside PHMAs	
Management Action Text	Sage-grouse breeding, nesting, and early brood-rearing habitat outside PHMAs: Surface disturbing and/or disruptive activities would be prohibited from March 15–June 30 to protect sage-grouse nesting and early brood rearing habitats within 2 miles of the lek or lek perimeter of any occupied lek located outside PHMAs. Where credible data support different timeframes for this restriction, dates could be shifted by 14 days prior or subsequent to the above dates.
Protected Resource	Sage-grouse breeding, nesting, and early brood-rearing habitat outside sage-grouse core and connectivity habitat areas
Acres Affected	3,254,564 acres BLM administration (BLM surface plus federal mineral interests

(Approx.)	regardless of surface ownership)
Stipulation Description	**Stipulation:** Greater Sage-Grouse breeding, nesting, and early brood-rearing habitat outside designated PHMAs (Core and Connectivity). This area encompasses Greater Sage-Grouse breeding, nesting, and early brood-rearing habitat outside designated PHMAs (Core and Connectivity). No surface use is allowed during March 15 – June 30 in Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats outside designated PHMA (Core and Connectivity), within two miles of an occupied lek. Where credible data support different timeframes for this restriction, dates may be expanded by 14 days prior or subsequent to the above dates. **Purpose:** To seasonally protect Greater Sage-Grouse breeding, nesting, and early brood-rearing habitats from disruptive activities outside designated core areas and connectivity areas, within two miles of an occupied lek. **Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not affect reproductive displays, nest attendance, egg or chick survival, or early brood-rearing success. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. **Modification:** The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse, including (but not limited to) reproductive display, daytime loafing/staging activities, and nesting. **Waiver:** This stipulation may be waived over the entire lease if, in coordination with the state wildlife agency, it is determined that the Greater Sage-Grouse lek has been classified as unoccupied as determined by the state wildlife agency. Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manuals 1624 and 3101.)
Management Action: MD SSS 10	**Stipulation Type: TLS**
Greater Sage-Grouse winter concentration areas within PHMAs (core only), and outside PHMAs (core only) when supporting wintering Greater Sage-Grouse that nest within PHMAs (core only)	
Management Action Text	Sage-grouse winter concentration areas: Surface disturbing and/or disruptive activities in sage-grouse winter concentration areas, to be mapped by the WGFD, would be prohibited from December 1–March 14. Activities in unsuitable habitats within PHMAs would be evaluated under the exception, waiver, and modification criteria and could be allowed on a case-by-case basis. Protection of additional mapped winter concentration areas in GHMAs would be implemented ONLY where winter concentration areas are identified as supporting biologically significant numbers of sage-grouse nesting in PHMAs and/or attending leks within PHMAs (core only). Appropriate seasonal timing restrictions and habitat protection measures would be considered and evaluated in consultation with the WGFD in all identified winter concentration areas.
Protected Resource	Greater Sage-Grouse winter concentration areas within designated core areas, and outside designated core areas when supporting wintering Greater Sage-Grouse that nest within designated core areas
Acres Affected (Approx.)	Within PHMAs: 3,440,748 acres BLM administration (BLM surface plus federal mineral interests regardless of surface ownership) Outside PHMAs: 5,411,070 acres BLM administration (BLM surface plus federal mineral interests regardless of surface ownership)
Stipulation Description	**Stipulation:** Greater Sage-Grouse winter concentration areas. This area encompasses

	Greater Sage-Grouse winter concentration areas. No surface use is allowed during December 1 – March 14 within mapped Greater Sage-Grouse winter concentration areas in designated PHMAs (Core only), and outside designated PHMAs (Core only) when supporting wintering Greater Sage-Grouse that attend leks within designated PHMAs (Core only). **Purpose:** To seasonally protect Greater Sage-Grouse winter concentration areas from disruptive activities. **Exception:** The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, will not impair the function and suitability of the winter concentration area, or it is determined that the winter concentration area is not occupied by concentrated populations of Greater Sage-Grouse during the period of concern. Actions designed to enhance the long-term utility or availability of suitable Greater Sage-Grouse habitat may be exempted from this timing limitation. The BLM can and does grant exceptions to seasonal restrictions if the BLM, in coordination with the WGFD, determines that granting an exception would not adversely impact the population being protected. **Modification:** The authorized officer may modify the size and shape of the TLS area or the TLS criteria if an environmental record of review indicates the actual habitat suitability for seasonal Greater Sage-Grouse activities is greater or less than the stipulated area, or it is identified through scientific research or monitoring that the existing criteria are inadequate or overly protective for maintaining the function or utility of the site for the seasonal habitat, life-history, or behavioral needs of the Greater Sage-Grouse. **Waiver:** No Waiver

Appendix D – The Greater Sage-Grouse Habitat Management Strategy

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Introduction

The Wyoming Greater Sage-Grouse Approved Resource Management Plan Amendments (ARMPA) provides specific goals, objectives, management actions, and required design features for the conservation of Greater Sage-Grouse in Wyoming. These are the commitments made to meet the federal agencies' national policy and direction for the conservation of Greater Sage-Grouse in light of the 2010 US Fish and Wildlife Service listing decision as warranted but precluded from listing under the Endangered Species Act. Through the National Planning Strategy, Bureau of Land Management (BLM), in coordination with US Fish and Wildlife Service (USFWS) have identified conservation measures to be included in the land use plans as the principal regulatory mechanisms to assure adequate conservation of the Greater Sage-Grouse and its habitat on public lands.

The measures identified in the ARMPA have been developed in coordination with not just the USFWS, but also the State of Wyoming, including the Wyoming Game and Fish Department (WGFD), and local cooperating agencies including conservation districts and counties.

Wyoming has established core population areas to help delineate landscape planning units by distinguishing areas of high biological value. These areas are based on the locations of breeding areas and are intended to help balance Greater Sage-Grouse habitat requirements with demand for energy development (Doherty et al. 2011). The ARMPA is consistent with the Core Area Strategy, but contains additional restrictions to protect other resources, which results in added protections to Greater Sage-Grouse habitat and achieving conservation objectives identified in the Conservation Objectives Team (COT) report on BLM-managed public lands. The COT report indicates that the Core Area Strategy is a substantial regulatory mechanism that contributes to the conservation of Greater Sage-Grouse and balances the priorities of retaining a healthy Greater Sage-Grouse population on the landscape and energy development.

This appendix will introduce the framework for implementation of Greater Sage-Grouse conservation measures within BLM Field Offices. Implementation is a combination of permitting activities under the auspices of management direction provided in the ARMPA, undertaking specific activities in pursuit of the goals and objectives identified in the plan and monitoring of sagebrush habitat and populations.

The implementation framework outlined here is focused specifically towards Greater Sage-Grouse and is reflective of how the national strategy will be assimilated into the existing statewide implementation efforts currently in place in Wyoming. This framework has been developed mindful of the varying scales at which implementation will be evaluated at the local level to define successful conservation measures, at the state level to assess success of the statewide strategy, and across the species' range.

In 2013, the Director of the USFWS tasked staff with the development of range-wide conservation objectives for the sage-grouse to define the degree to which threats need to be reduced or ameliorated to conserve sage-grouse so that it is no longer in danger of extinction or likely to become in danger of extinction in the foreseeable future. Recognizing that state wildlife agencies have management expertise and management authority for sage-grouse, the USFWS created a COT of state and USFWS representatives to accomplish this task.

The COT conservation framework consisted of (1) identifying sage-grouse population and habitat status and threats, (2) defining a broad conservation goal, (3) identifying priority areas for conservation, and (4) developing specific conservation objectives and measures. The COT used three parameters—population and habitat representation, redundancy, and resilience (Shaffer and Stein 2010, Redford *et al.* 2011)—as guiding concepts in developing the conservation goal, priority areas for conservation, conservation objectives, and measures.

The COT report identified priority areas for Greater Sage-Grouse population habitats as Priority Areas for Conservation (PACs). PACs are recognized as key areas across the landscape that are necessary to maintain redundant, representative, and resilient populations of the species. The COT Report describes maintaining the

integrity of PACs as "the essential foundation for sage-grouse conservation." PACs cover nearly 73 million acres across the West; within Wyoming, more than 15 million acres are considered priority habitat. Fifty-two percent of the priority habitat is BLM administered surface and 71 percent is BLM-administered minerals. Based upon 2007 through 2015 lek counts, PHMA in Wyoming contains an estimated 83 percent of the state-wide population of Greater Sage-Grouse.

Table 1. Greater Sage-Grouse Habitat within Wyoming

Populations / Subpopulations: ***Wyoming Portion, Powder River and Wyoming Basins; Laramie; Jackson Hole; WAFWA Management Zones I & II***			
Surface Estate	**Priority Area Acres (%)**	**General Habitat Acres (%)**	**Non-Habitat Acres (%)**
Private	5,655,716 (38)	14,028,015 (53)	7,004,437
State	1,119,078 (7)	1,766,279 (7)	754,053
BLM	7,823,055 (52)	9,296,487 (35)	328,750
Other[1]	483,710 (3)	1,104,942 (5)	10,363,760
Total	15,081,561	26,650,412	18,451,000
Fluid Mineral Estate	**Priority Area Acres (%)**	**General Habitat Acres (%)**	**Non-Habitat Acres**
Non-federal	4,360,416 (29)	10,450,584 (40)	6,433,438
BLM Managed[2]	10,721,145 (71)	15,745,138 (60)	12,017,562
Total	15,081,561	26,195,722	

[1]Excludes Wind River Indian Reservation Acreages
[2]BLM Managed Minerals includes 10,335,190 acres within National Parks, State Parks and Historic Sites, National Forests, National Wildlife Refuges and DOD Reservations. Of this total, BLM has jurisdiction on only 1,682,372 acres.

The conservation objectives identified in the COT Report, targeted at maintaining redundant, representative, and resilient sage-grouse habitats and populations, is the basis on which Wyoming's Sage-grouse Proposed RMP Amendments were developed. Due to the variability in ecological conditions and the nature of the threats across the range of the sage-grouse, developing detailed, prescriptive species or habitat actions was not attainable at the range-wide scale. Specific strategies and actions necessary to achieve the conservation objectives have been developed by the BLM in cooperation with state and local governments to ensure implementation of activities to meet the objectives identified in the COT report.

COT Objective 1: Stop Population Declines and Habitat Loss

> *"There is an urgent need to 'stop the bleeding' of continued population declines and habitat losses by acting immediately to eliminate or reduce the impacts contributing to population declines and range erosion. There are no populations within the range of sage-grouse that are immune to the threat of habitat loss and fragmentation (COT report 2013)."*

The COT report identified a series of threats to Greater Sage-Grouse habitat and the extent of those threats at the population scale. The management actions identified in the ARMPA were specifically designed to reduce the threats, as they were identified. The Wyoming RMPs encompass lands within WAFWA Management Zones 1 and 2. To ensure that the threats are adequately addressed by the ARMPA, a strategy for reviewing activities and projects on public lands to determine the extent of their impact on Greater Sage-Grouse habitat has also been developed. The following outlines the process by which all activities on public lands will be reviewed.

The BLM will ensure that any activities or projects in Greater Sage-Grouse habitats would: 1) only occur in compliance with the Wyoming BLM's Greater Sage-Grouse goals and objectives for priority management areas; and 2) maintain neutral or positive Greater Sage-Grouse population trends and habitat by avoiding, minimizing, and offsetting unavoidable impacts to assure a conservation gain at the scale of this land use plan and within Greater Sage-Grouse population areas, state boundaries, and WAFWA Management Zones through the application of mitigation for implementation-level decisions. The mitigation process will follow the regulations from the White House Council on Environmental Quality (CEQ) (40 CFR 1508.20; e.g. avoid, minimize, and compensate), hereafter referred to as the mitigation hierarchy, while also following Secretary of the Interior Order 3330 and consulting BLM, USFWS and other current and appropriate mitigation guidance. If it is determined that residual impacts to Greater Sage-Grouse from implementation-level actions would remain after applying avoidance and minimization measures to the extent possible, compensatory mitigation projects will be used to offset residual impacts, or the project may be deferred or denied if necessary to achieve the goals and objectives for priority and general management areas in the Wyoming BLM RMPs.

To ensure that impacts from activities proposed in sage-grouse Core Areas are appropriately approved and mitigated as necessary, the BLM will apply mitigation measures and conservation actions and potentially modify the location, design, construction, and/or operation of proposed land uses or activities to comply with statutory requirements for environmental protection. The mitigation measures and conservation actions (Appendix C) for proposed projects or activities in these areas will be identified as part of the National Environmental Policy Act (NEPA) environmental review process, through interdisciplinary analysis involving resource specialists, project proponents, government entities, landowners or other surface management agencies. Those measures selected for implementation will be identified in the record of decision (ROD) or decision record (DR) for those authorizations and will inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands and minerals to mitigate, per the mitigation hierarchy referenced above, impacts from the activity or project such that sage-grouse goals and objectives are met. Because these actions create a clear obligation for the BLM to ensure any proposed mitigation action adopted in the environmental review process is performed, there is assurance that mitigation will lead to a reduction of environmental impacts in the implementation stage and include binding mechanisms for enforcement (CEQ Memorandum for Heads of Federal Departments and Agencies 2011).

To achieve the goals and objectives for core areas in the ARMPA, the BLM will assess all proposed land uses or activities such as road, pipeline, communication tower, or power line construction, fluid and solid mineral development, range improvements, and recreational activities proposed for location in core areas in a step-wise manner. The following steps identify a screening process for review of proposed activities or projects in these areas. This process will provide a consistent approach and ensure that authorization of these projects, if granted, will appropriately mitigate impacts and be consistent with ARMPA goals and objectives for sage-grouse. The following steps provide for a sequential screening of proposals.

Step 1 – Determine Proposal Adequacy

This screening process is initiated upon formal submittal of a proposal for authorization for use of BLM lands. The actual documentation of the proposal would include at a minimum a description of the location, scale of the project and timing of the disturbance. The acceptance of the proposal(s) for review would be consistent with existing protocol and procedures for each type of use. Evaluating consistency with (at a minimum) state sage-grouse regulations.

Step 2 – Evaluate Proposal Consistency with ARMPA

Step 2.1 –The proposal will be reviewed to determine whether it would be allowed as prescribed in the ARMPA. For example, some activities or types of development are prohibited in sage-grouse habitat, such as wind developments in priority habitat. Evaluation of projects will also include an assessment of the current state of the adaptive management hard and soft triggers. If the proposal is for an activity that is specifically prohibited, the applicant should be informed that the application is being rejected since it would not be allowed, regardless of the design of the project.

Step 2.2 –The proposal will be reviewed to determine whether it conforms with the Density and Disturbance Limitations. If the proposed activity occurs within a priority habitat management area (PHMA), evaluate whether the disturbance from the activity exceeds the limit on the amount of disturbance allowed within the activity or project area (Density/Disturbance Calculation Tool [DDCT] process). If current disturbance within the activity area or the anticipated disturbance from the proposed activity exceeds this threshold, the project would be deferred until such time as the amount of disturbance within the area has been reduced below the threshold, redesigned so as to not result in any additional surface disturbance (collocation) or redesigned to move it outside of PHMA. Should the project be a result of a valid existing right, BLM will work to minimize the disturbance and determine any residual impacts that may require appropriate mitigation.

The maximum density of disruptive activities and surface disturbance allowed will be analyzed via the DDCT, and will be conducted by the Federal Land Management Agency on federal land and the project proponent on non-federal (private, state) land based on the ARMPA.

State agency permit is needed, without a need for a federal permit:

The first point of contact for addressing sage-grouse issues for any state permit application should be the WGFD. Project proponents (proponents) need to have a thorough description of their project and identify the potential effects on sage-grouse prior to submitting an application to the permitting agency. Project proponents should contact WGFD at least 45-60 days prior to submitting their application. More complex projects will require more time. It is understood that WGFD has a role of consultation, recommendation, and facilitation, and has no authority to either approve or deny the project. The purpose of the initial consultation with the WGFD is to become familiar with the project proposal and ensure the project proponent understands the DDCT and recommended stipulations.

Federal agency permit is needed, with or without a state permit:

When a project requires federal action prior to approval, the proponent should contact the federal agency responsible for reviewing the action. The federal agency and the proponent will determine the best process for completing the DDCT and receiving recommendations from WGFD. Project proponents (proponents) need to have a thorough description of their project and identify the potential effects on sage-grouse prior to submitting an application to the permitting agency.

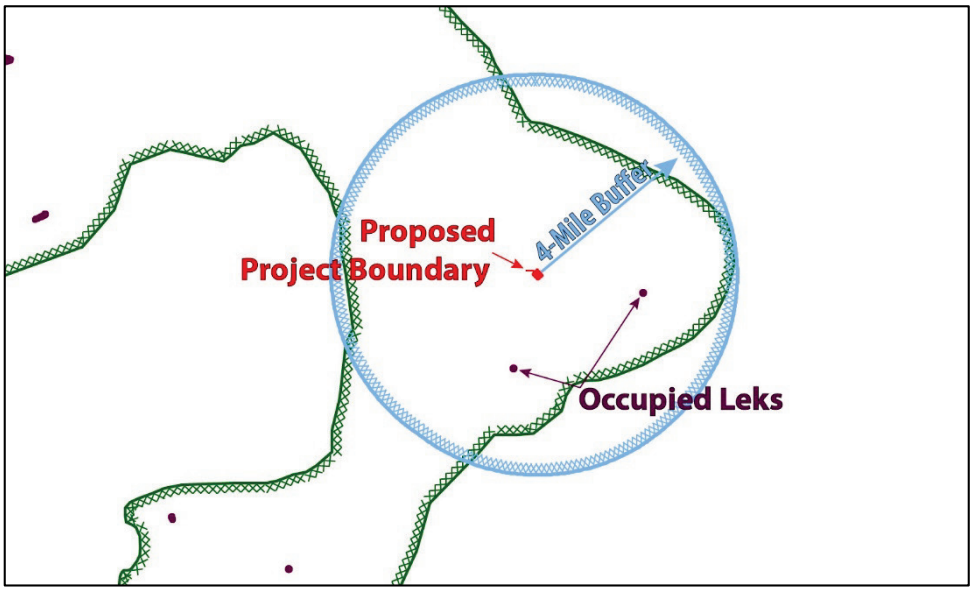
Maximum Density and Disturbance Process

Density and Disturbance Calculation: The Density and Disturbance Calculation Tool, or DDCT, is a spatially-based tool that calculates both the average density of disruptive activities and total surface disturbance within the area affected by the project, or DDCT assessment area. The DDCT assessment area is created based on buffers around proposed projects (first buffer) in protected sage-grouse core areas, and subsequent buffers around any occupied, core area leks within the first buffer. A four mile buffer is used to

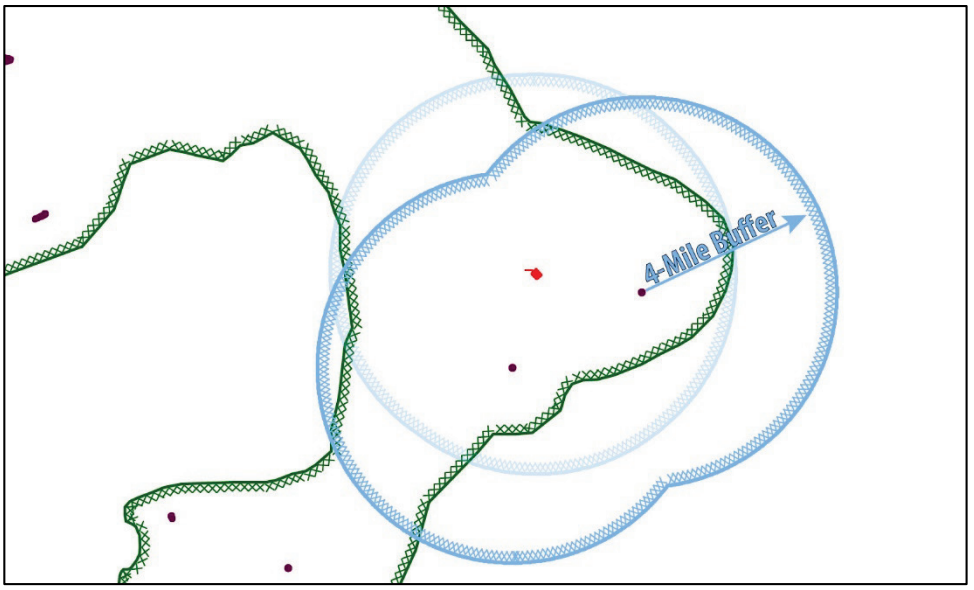
identify 75% of the sage-grouse use around a lek. All activities will be evaluated within the context of maximum allowable disturbance (disturbance percentages, location and number of disturbances) of suitable sage-grouse habitat within the DDCT assessment area. This tool allows for better siting of projects rather than averaging the density/disturbance calculation per section.

All lands within core area boundaries are is considered suitable habitat unless documented. Mapped unsuitable habitat is treated neither as suitable habitat, nor disturbance, which results in the area being removed from the DDCT assessment area altogether.

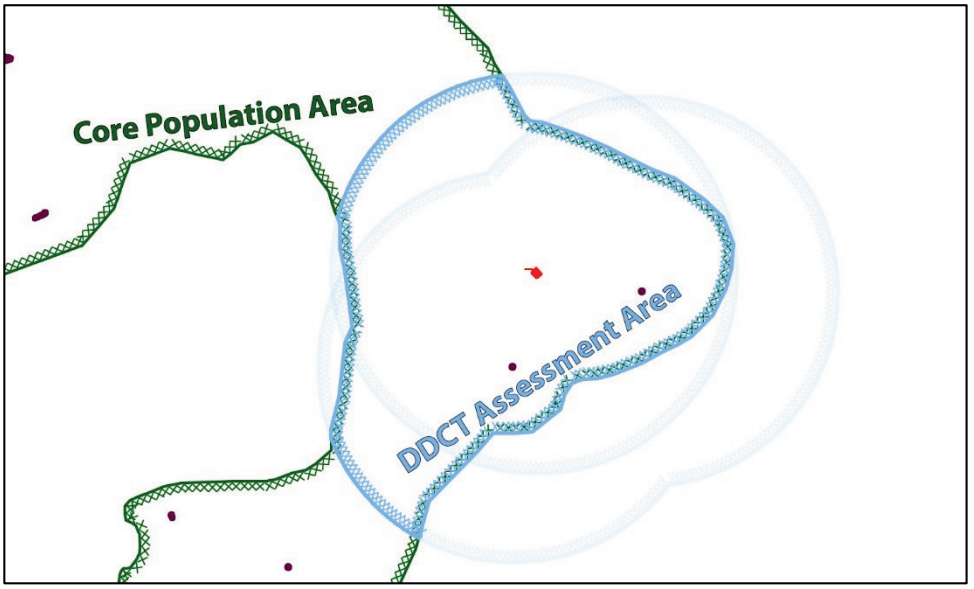
1. Density/Disturbance Calculation Tool (DDCT): Determine all occupied leks within a core population area that may be affected by the project by placing a 4 mile boundary around the project boundary (as defined by the proposed area of disturbance related to the project). All occupied leks located within the 4 mile boundary and within a core population area will be considered in this assessment.



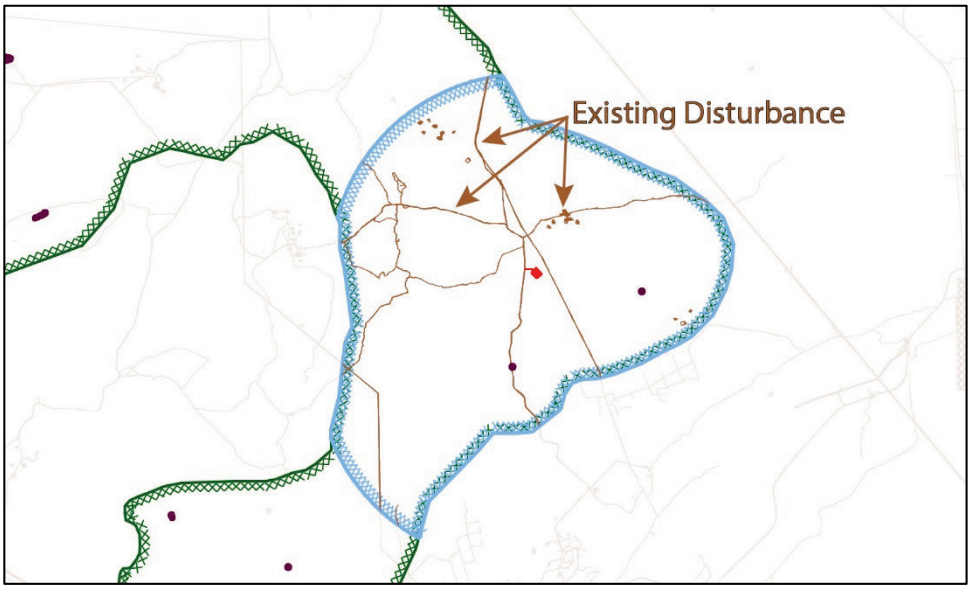
A four-mile boundary will then be placed around the perimeter of each of these lek(s).



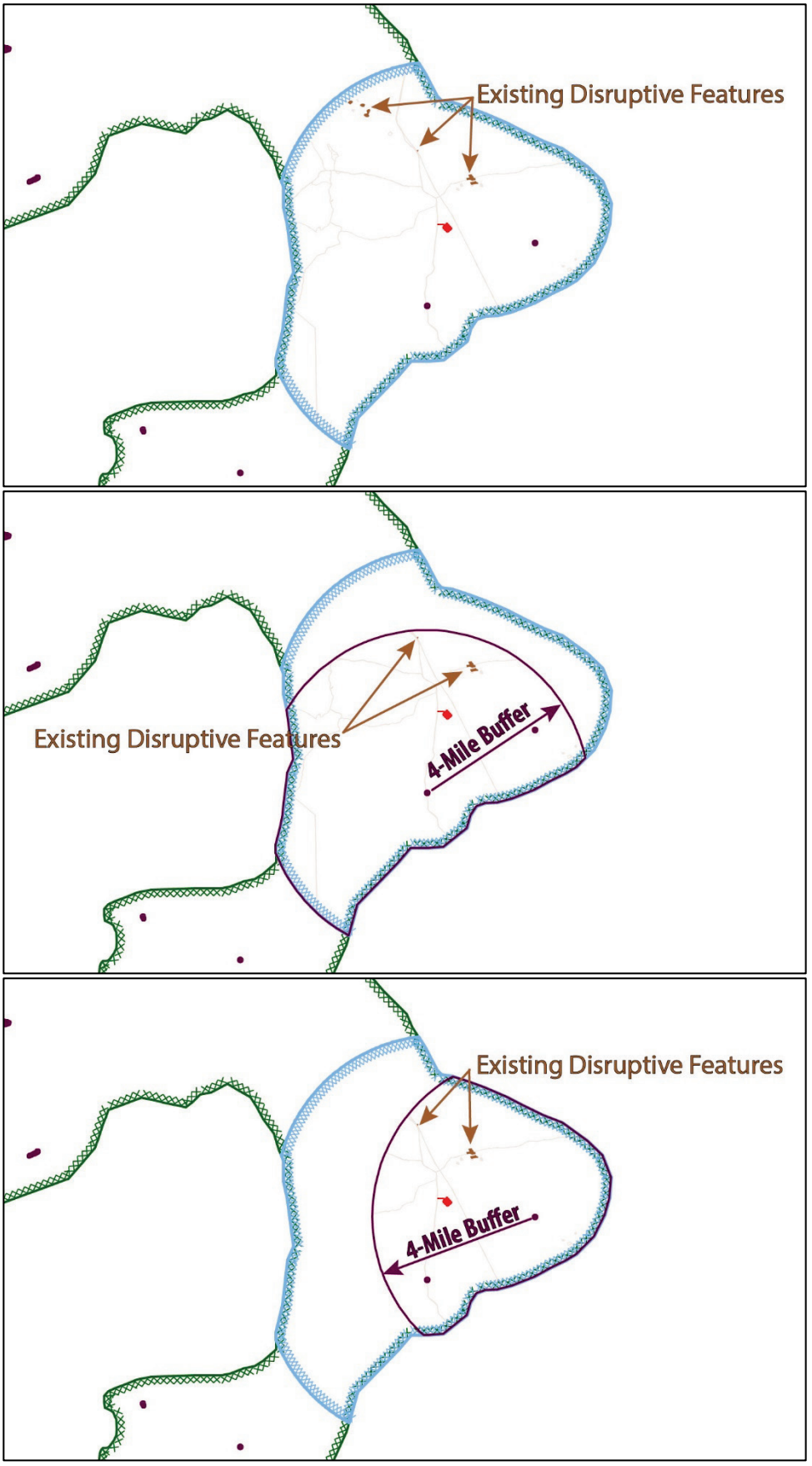
The core population area within the combined 4 mile buffer around both the leks and the project boundary creates the DDCT assessment area for each individual project.



Disturbance will be analyzed for the DDCT assessment area as a whole and for each individual lek within the DDCT assessment area.



Density of disruptive features will be analyzed for the DDCT assessment area as a whole and for each individual lek within the DDCT assessment area.


Existing Disruptive Features
Existing Disruptive Features
4-Mile Buffer
Existing Disruptive Features
4-Mile Buffer

If there are no leks identified for this assessment within the 4 mile boundary around the project boundary, the DDCT assessment area will be that portion of the 4 mile project boundary within the core population area.

2. Density and Disturbance analysis: The total number of discrete disruptive activity features, as well as the total disturbance acres within the DDCT assessment area will be determined through an evaluation of:

    a. Existing disturbance (sage-grouse habitat that is disturbed due to existing anthropogenic activity and wildfire).

    b. Approved permits (that have approval for on the ground activity) not yet implemented.

    c. Validating digitized disturbance through on the ground evaluation.

The complete analysis package (DDCT results, mapbook, and Worksheet), and recommendations developed by consultation and review outlined herein will be forwarded to the appropriate permitting agency(s). WGFD recommendations will be included, as will other recommendations from project proponents and other appropriate agencies. Project proponent shall have access to all information used in developing recommendations. Where possible and when requested by the project proponent, state agencies shall provide the project proponent with potential development alternatives other than those contained in the project proposal.

If the permit for which a proponent has applied expires, another DDCT analysis is required before issuing a new permit. An additional DDCT is not required for permit extensions or renewals when no changes are being authorized. Any project will need to comply with the current Executive Order.

Step 2.3 – The BLM's goal for any new activity or development proposal within core areas is to provide consistent implementation of project proposals which meet the BLM's ARMPA goals and the population management objectives of the state. Activities would be consistent with the strategy where it can be sufficiently demonstrated that no declines to core populations would be expected as a result of the proposed action. Published research suggests that impacts to sage-grouse leks associated primarily with infrastructure and energy development are discernible at a distance of at least 4 miles and that many leks within this radius have been extirpated as a direct result of development (Walker et al. 2007, Walker 2008). Research also suggests that an evaluation of habitats and sage-grouse populations that attend leks within an 11-mile radius from the project boundary in the context of "large" projects may be appropriate in order to consider all seasonal habitats that may be affected for birds that use the habitats associated with the proposal during some portion of the life-cycle of seasonally migratory sage-grouse (Connelly et al. 2000).

To determine the manner in which Greater Sage-Grouse may be impacted by proposed undertakings, the following will be reviewed in the site specific NEPA analysis to quantify the effects:

- Greater Sage-Grouse habitat delineation maps.
- Current science recommendations.
- The 'Base Line Environment Report' (USGS) which identifies areas of direct and indirect effect for various anthropogenic activities.
- Consultation with agency or state wildlife agency biologist.
- Other methods needed to provide an accurate assessment of impacts.

If the proposal will not have a direct or indirect impact on either the habitat or population, document the findings in the NEPA and proceed with the appropriate process for review, decision and implementation of the project.

Step 3–Apply Avoidance and Minimization Measures to Comply with Sage-Grouse Goals and Objectives

If the project can be relocated so as to not have an impact on sage-grouse and still achieve objectives of the proposal and the disturbance limitations, relocate the proposed activity and proceed with the appropriate process for review, decision and implementation (NEPA and Decision Record). This Step does not consider redesign of the project to reduce or eliminate direct and indirect impacts, but rather authorization of the project in a physical location that will not impact Greater Sage-Grouse. If the preliminary review of the proposal concludes that there may be adverse impacts to sage-grouse habitat or populations in Step 2 and the project cannot be effectively relocated to avoid these impacts, proceed with the appropriate process for review, decision and implementation (NEPA and Decision Record) with the inclusion of appropriate mitigation requirements to further reduce or eliminate impacts to sage-grouse habitat and populations and achieve compliance with sage-grouse objectives. Mitigation measures could include design modifications of the proposal, site disturbance restoration, post project reclamation, etc. (see Appendix C) Compensatory or offsite mitigation may be required (Step 4) in situations where residual impacts remain after application of all avoidance and minimization measures.

Step 4 – Apply Compensatory Mitigation or Reject / Defer Proposal

If screening of the proposal has determined that direct and indirect impacts cannot be eliminated through avoidance or minimization, evaluate the proposal to determine if compensatory mitigation can be used to offset the remaining adverse impacts and achieve sage-grouse goals and objectives. If the impacts cannot be effectively mitigated, reject or defer the proposal. The criteria for determining this situation could include but are not limited to:

- The current trend within the priority habitat is down and additional impacts, whether mitigated or not, could lead to further decline of the species or habitat.

- The proposed mitigation is inadequate in scope or duration, has proven to be ineffective or is unproven is terms of science based approach.

- The project would impact habitat that has been determined to be a limiting factor for species sustainability.

- Other site specific information and analysis that determined the project would lead to a downward change of the current species population or habitat and not comply with sage-grouse goals and objectives.

If, following application of available impact avoidance and minimization measures, the project can be mitigated to fully offset impacts and assure conservation gain to the species and comply with sage-grouse goals and objectives, proceed with the appropriate process for review, decision and implementation (NEPA and Decision Record).

Mitigation

General

In undertaking BLM management actions and, consistent with valid existing rights and applicable law, in authorizing third party actions that result in habitat loss and degradation, the BLM will require and assure mitigation that provides a net conservation gain to the species, including accounting for any uncertainty associated with the effectiveness of such mitigation. This will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. In Wyoming, the USFWS has found that "the core area strategy, if implemented by all landowners via regulatory mechanism, would provide adequate protection for sage-grouse and their habitats in the state." The BLM will implement actions to achieve the goal of net conservation gain consistent with the Wyoming Strategy (EO 2015-4). Compensatory mitigation

would be used when avoidance and minimization measures consistent with EO 2015-4 are inadequate to protect core population area Greater Sage-Grouse.

Mitigation will follow the regulations from the White House Council on Environmental Quality (CEQ) (40 CFR 1508.20; e.g. avoid, minimize, and compensate), hereafter referred to as the mitigation hierarchy. If impacts from BLM management actions and authorized third party actions that result in habitat loss and degradation remain after applying avoidance and minimization measures (i.e. residual impacts), then compensatory mitigation projects will be used to provide a net conservation gain to the species. Any compensatory mitigation will be durable, timely, and in addition to that which would have resulted without the compensatory mitigation (see glossary).

The BLM, via the WAFWA Management Zone Greater Sage-Grouse Conservation Team, will develop a WAFWA Management Zone Regional Mitigation Strategy that will inform the NEPA decision making process including the application of the mitigation hierarchy for BLM management actions and third party actions that result in habitat loss and degradation. A robust and transparent Regional Mitigation Strategy will contribute to Greater Sage-Grouse habitat conservation by reducing, eliminating, or minimizing threats and compensating for residual impacts to Greater Sage-Grouse and its habitat.

The BLM's Regional Mitigation Manual MS-1794 serves as a framework for developing and implementing a Regional Mitigation Strategy. The following sections provide additional guidance specific to the development and implementation of a WAFWA Management Zone Regional Mitigation Strategy.

Developing a WAFWA Management Zone Regional Mitigation Strategy

The BLM, via the WAFWA Management Zone Greater Sage-Grouse Conservation Team, will develop a WAFWA Management Zone Regional Mitigation Strategy to guide the application of the mitigation hierarchy for BLM management actions and third party actions that result in habitat loss and degradation. The strategy should consider any state-level Greater Sage-Grouse mitigation guidance that is consistent with the requirements identified in this appendix. The Regional Mitigation Strategy should be developed in a transparent manner, based on the best science available and standardized metrics.

As described in the ARMPA, the BLM will establish a WAFWA Management Zone Greater Sage-Grouse Conservation Team (hereafter, Team) to help guide the conservation of Greater Sage-Grouse, within 90 days of the issuance of the Record of Decision. The Strategy will be developed within one year of the issuance of the Record of Decision.

The Regional Mitigation Strategy should include mitigation guidance on avoidance, minimization, and compensation, as follows:

- Avoidance
  - Include avoidance areas (e.g. right-of-way avoidance/exclusion areas, no surface occupancy areas) already included in laws, regulations, policies, and/or land use plans (e.g. RMPs, state plans); and,
  - Include any potential, additional avoidance actions (e.g. additional avoidance best management practices) with regard to Greater Sage-Grouse conservation.

- Minimization
  - Include minimization actions (e.g. required design features, best management practices) already included in laws, regulations, policies, land use plans, and/or land-use authorizations; and,
  - Include any potential, additional minimization actions (e.g. additional minimization best management practices) with regard to Greater Sage-Grouse conservation.

- Compensation

– Include discussion of impact/project valuation, compensatory mitigation options, siting, compensatory project types and costs, monitoring, reporting, and program administration. Each of these topics is discussed in more detail below.

  - Residual Impact and Compensatory Mitigation Project Valuation Guidance
    - A common standardized method should be identified for estimating the value of the residual impacts and value of the compensatory mitigation projects, including accounting for any uncertainty associated with the effectiveness of the projects.
    - This method should consider the quality of habitat, scarcity of the habitat, and the size of the impact/project.
    - For compensatory mitigation projects, consideration of durability (see glossary), timeliness (see glossary), and the potential for failure (e.g. uncertainty associated with effectiveness) may require an upward adjustment of the valuation.
    - The resultant compensatory mitigation project will, after application of the above guidance, result in proactive conservation measures for Greater Sage-Grouse (consistent with BLM Manual 6840 – Special Status Species Management, section .02).
  - Compensatory Mitigation Options
    - Options for implementing compensatory mitigation should be identified, such as:
      - Utilizing certified mitigation/conservation bank or credit exchanges.
      - Contributing to an existing mitigation/conservation fund.
      - Authorized-user conducted mitigation projects.
    - For any compensatory mitigation project, the investment must be additional (i.e. additionality: the conservation benefits of compensatory mitigation are demonstrably new and would not have resulted without the compensatory mitigation project).
  - Compensatory Mitigation Siting
    - Sites should be in areas that have the potential to yield a net conservation gain to the Greater Sage-Grouse, regardless of land ownership.
    - Sites should be durable (see glossary).
    - Sites identified by existing plans and strategies (e.g. fire restoration plans, invasive species strategies, healthy land focal areas) should be considered, if those sites have the potential to yield a net conservation gain to Greater Sage-Grouse and are durable.
  - Compensatory Mitigation Project Types and Costs
    - Project types should be identified that help reduce threats to Greater Sage-Grouse (e.g. protection, conservation, and restoration projects).
    - Each project type should have a goal and measurable objectives.
    - Each project type should have associated monitoring and maintenance requirements, for the duration of the impact.
    - To inform contributions to a mitigation/conservation fund, expected costs for these project types (and their monitoring and maintenance), within the WAFWA Management Zone, should be identified.
  - Compensatory Mitigation Compliance and Monitoring

    - Mitigation projects should be inspected to ensure they are implemented as designed, and if not, there should be methods to enforce compliance.
    - Mitigation projects should be monitored to ensure that the goals and objectives are met and that the benefits are effective for the duration of the impact.
- Compensatory Mitigation Reporting
    - Standardized, transparent, scalable, and scientifically-defensible reporting requirements should be identified for mitigation projects.
    - Reports should be compiled, summarized, and reviewed in the WAFWA Management Zone in order to determine if Greater Sage-Grouse conservation has been achieved and/or to support adaptive management recommendations.
- Compensatory Mitigation Program Implementation Guidelines
    - Guidelines for implementing the state-level compensatory mitigation program should include holding and applying compensatory mitigation funds, operating a transparent and credible accounting system, certifying mitigation credits, and managing reporting requirements.

Incorporating the Regional Mitigation Strategy into NEPA Analyses

The BLM will include the avoidance, minimization, and compensatory recommendations from the Regional Mitigation Strategy in one or more of the NEPA analysis' alternatives for BLM management actions and third party actions that result in habitat loss and degradation and the appropriate mitigation actions will be carried forward into the decision.

Implementing a Compensatory Mitigation Program

The BLM needs to ensure that compensatory mitigation is strategically implemented to provide a net conservation gain to the species, as identified in the Regional Mitigation Strategy. In order to align with existing compensatory mitigation efforts, this compensatory mitigation program will be managed at a state-level (as opposed to a WAFWA Management Zone or a Field Office), in collaboration with our partners (e.g. federal, Tribal, and state agencies).

To ensure transparent and effective management of the compensatory mitigation funds, the BLM will enter into a contract or agreement with a third-party to help manage the state-level compensatory mitigation funds, within one year of the issuance of the Record of Decision. The selection of the third-party compensatory mitigation administrator will conform to all relevant laws, regulations, and policies. The BLM will remain responsible for making decisions that affect Federal lands.

COT Objective 2: Implement Targeted Habitat Management and Restoration

> *"Some sage-grouse populations warrant more than the amelioration of the impacts from stressors to maintain sage-grouse on the landscape. In these instances, and particularly with impacts resulting from wildfire, it may be critical to not only remove or reduce anthropogenic threats to these populations but additionally to improve population health through active habitat management (e.g. habitat restoration). This is particularly important for those populations that are essential to maintaining range-wide redundancy and representation." (COT report 2013)*

In many areas of Wyoming, amelioration of threats isn't enough. Activities must be taken to enhance the habitat for continued success of Greater Sage-Grouse. This objective identifies the areas where ARMPA will put forth the commitments for habitat restoration and enhancement.

The WGFD established local Greater Sage-Grouse working groups over 10 years ago. Each of these local working groups developed conservation plans which have served to guide conservation of Greater Sage-Grouse habitat at a local level. The management objectives for this federal land use plan were developed in coordination with the State of Wyoming, recognizing the ongoing work which has been done over the last 10 years in Wyoming as a result of the conservation efforts identified by each of the local working groups.

Upon completion of the planning process, with issuance of an Approved Plan and Record of Decision, subsequent implementation decisions will be put into effect by developing implementation (activity-level or project-specific) plans. These implementation decisions will be based upon the objectives identified in the Approved Plan and Record of Decisions, and will be coordinated with local working groups.

COT Objective 3: Develop and Implement State and Federal Conservation Strategies and Associated Incentive-based Conservation Actions and Regulatory Mechanisms.

> *"To conserve sage-grouse and habitat redundancy, representation, and resilience, state and federal agencies, along with interested stakeholders within range of the sage-grouse should work together to develop a plan, including any necessary regulatory or legal tools (or use an existing plan, if appropriate) that includes clear mechanisms for addressing the threats to sage-grouse within PACs. Where consistent with state conservation plans, sage-grouse habitats outside of PACs should also be addressed. We recognize that threats can be ameliorated through a variety of tools within the purview of states and federal agencies, including incentive-based conservation actions or regulatory mechanisms. Federal land management agencies should work with states in developing adequate regulatory mechanisms. Federal land management agencies should also contribute to the incentive-based conservation and habitat restoration and rehabilitation efforts. In the development of conservation plans, entities (states, federal land management agencies, etc.) should coordinate with USFWS. This will ensure that the plans address the threats contributing to the 2010 warranted but precluded determination, and that conservation strategies will meaningfully contribute to future listing analyses." (COT report 2013)*

Implementation Working Groups

Implementation strategies for a landscape scale species requires coordination across multiple scales, as the work that is conducted at the local scale must be tracked and evaluated for overall success within core areas, the state of Wyoming across the region. As the Greater Sage-Grouse is formally managed by the State of Wyoming, and has a statewide strategy through Governor's Executive Order 2011-05, implementation must be evaluated at that scale as well. For this reason, Wyoming Plans will utilize multiple types of working groups, representing each of the scales at which implementation will be tracked.

National Level

In December 2011, Wyoming Governor Matt Mead and Secretary of the Interior Ken Salazar co-hosted a meeting to address coordinated conservation of the sage-grouse across its range. Ten states within the range of the sage-grouse were represented, as were the Natural Resources Conservation Service (NRCS), and the Department of the Interior (DOI) — including representatives from the BLM and USFWS. The primary outcome of the meeting was the creation of a Sage-Grouse Task Force (Task Force) chaired by Governors Mead (Wyoming) and Hickenlooper (Colorado) and the Director of the BLM. The Task Force was directed to develop recommendations on how to best advance a coordinated, multi-state, range-wide effort to conserve the sage-grouse, including the identification of conservation objectives to ensure the long-term viability of the species.

Regional Level

Regional Level Teams (Sage-grouse Implementation Group)

State Level

The Sage-grouse Implementation Team (SGIT) has been established through Wyoming Legislature (Wyoming Statute 9-19-101(a)) to review data and make recommendations to the Governor of Wyoming regarding actions and funding to enhance and restore Greater Sage-Grouse habitats in Wyoming. Additionally, the SGIT is responsible for making recommendations to the Governor regarding regulatory actions necessary to maintain Greater Sage-Grouse populations and Greater Sage-Grouse habitats.

Adaptive Management Working Group (AMWG) has been established in consultation with the SGIT to provide appropriate guidance for agencies with the ability to affect sage-grouse populations and/or habitat through their permitting authority. The AMWG includes BLM, USFWS, and State of Wyoming.

Local Level

In 2000, a Local Working Group was established by the WGFD to develop and facilitate implementation of local conservation plans for the benefit of sage-grouse, their habitats, and whenever feasible, other species that use sagebrush habitats. This group prepared the Wyoming Greater Sage-Grouse Conservation Plan (Wyoming Sage-Grouse Working Group 2003) to provide coordinated management and direction across the state. In 2004, local Greater Sage-Grouse working groups were formed to develop and implement local conservation plans. Eight local working groups around Wyoming have completed conservation plans, many of which prioritize addressing past, present, and reasonably foreseeable threats at the state and local levels, and prescribe management actions for private landowners to improve Greater Sage-Grouse conservation at the local scale, consistent with Wyoming's Core Population Area Strategy.

Implementation Tracking

Because the State of Wyoming continues to retain management of the species, and through implementation of the Executive Order, BLM Wyoming will continue to coordinate tracking of populations, disturbance and conservation actions.

DDCT GIS for tracking disturbance
Population counts
Lek counts
Conservation actions

In addition to the tracking databases being maintained by the State of Wyoming, a national- Greater Sage-Grouse Land Use Plan Decision Monitoring and Reporting Tool is being developed to describe how the BLM will consistently and systematically monitor and report implementation-level activity plans and implementation actions for all plans within the range of sage-grouse. A description of this tool for collection and reporting of tabular and spatially explicit data will be included in the Record of Decision or approved plan. The BLM will provide data that can be integrated with other conservation efforts conducted by state and federal partners.

Public Involvement

A website where the public can quickly and easily access data concerning implementation will be developed and kept current on the Wyoming BLM database. Creating this website and maintaining it through the implementation cycle will be a vital part of implementation success. The public is welcome to provide implementation comments to the BLM any time during the cycle, but schedules for implementation planning decisions will be posted so the public can make timely comments. All Activity Plan Working Group meetings where recommendations are made to the BLM will be open to the public, and will provide for specific and helpful public involvement. This includes providing web-based information to the public prior to any Activity Plan Working Group meetings; such that members of the public can provide input to the working session, both early and mid-way through the scheduled meetings.

The state sponsored LWG and SGIT meetings are advertised and open to the public.

COT Objective 4: Proactive Conservation Actions

> *"Proactive, incentive based, voluntary conservation actions (e.g. Candidate Conservation Agreements with Assurances, Natural Resources Conservation Service programs) should be developed and/or implemented by interested stakeholders and closely coordinated across the range of the species to ensure they are complimentary and address sage-grouse conservation needs and threats. These efforts need to receive full funding, including funding for necessary personnel." (COT report 2013)*

In addition to the conservation activities identified through implementation of the Resource Management Plan in coordination with the Local Working Group Conservation Plans, BLM will continue to partner with other agencies and stakeholders to identify conservation actions to benefit Greater Sage-Grouse habitat. Actions which may occur could include Candidate Conservation Agreements (CCA) with accompanying Candidate Conservation Agreements with Assurances (CCAA) and designation of conservation easements.

CCAs are entered into when a potential threat to habitat is identified. BLM enters into CCAs with USFWS to identify potential threats and plan for conservation measures to address potential threats. The purpose of federal land CCAs and the accompanying non-federal CCAAs is to encourage conservation actions for species that are not yet listed as threatened or endangered. The goal is that enhancements in conservation can preclude the need for federal listing or so that conservation can occur before the status of the species has become so dire that listing is necessary. Although a single property owner's activities may not eliminate the need to list, conservation, if conducted by enough property owners throughout the species' range, can eliminate the need to list.

The BLM will work with partners and stakeholders to develop species-specific or ecosystem-based conservation strategies and will work cooperatively with other agencies, organizations, governments, and interested parties for the conservation of sensitive species and their habitats to meet agreed on species and habitat management goals. Cooperative efforts are important for conservation based on an ecosystem management approach and will improve efficiency by combining efforts and fostering collaborative working relationships.

Conservation Easements are identified private lands with Greater Sage-Grouse habitat where the private landowners enter into voluntary agreements with the government to give up developmental rights which may adversely affect habitat. The most common way these areas may be used in Wyoming is for mitigation banks. Allowing development within some areas of historic Greater Sage-Grouse habitat or marginal habitat will require appropriate mitigation. In some cases the most appropriate mitigation may be for project proponents to buy credits at a conservation easement, thus creating a mitigation bank. Overall, the benefit is to the Greater Sage-Grouse, as it reduces the overall potential for fragmented habitat by ensuring there are areas with no development potential which could adversely affect the viability of the species.

To learn more about what CCAs and CCAAs are in place for Greater Sage-grouse, please see the US Fish and Wildlife website: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06W.

Sweetwater River Conservancy Habitat Conservation Bank

The Sweetwater River Conservancy Habitat Conservation Bank is the first conservation bank established for Greater Sage-Grouse. Located in central Wyoming, the bank manages habitat for Greater Sage-Grouse allowing energy development and other activities to proceed on other lands within Wyoming. A conservation bank is a site or suite of sites established under an agreement with the USFWS, intended to protect, and improve habitat for species. Credits may be purchased which result in perpetual conservation easements and conservation projects on the land to offset impacts occurring elsewhere. The Sweetwater River Conservancy Habitat Conservation Bank launched with 55,000 deeded acres of Greater Sage-Grouse habitat, and could expand up to 700,000 acres on other lands owned by the Sweetwater River Conservancy contingent upon demand (USFWS 2015).

Wyoming Landscape Conservation Initiative

The Wyoming Landscape Conservation Initiative is a long-term science based effort to assess and enhance aquatic and terrestrial habitats at a landscape scale in southwest Wyoming, while facilitating responsible development through local collaboration and partnership. Collaborative efforts address multiple concerns at a scale that considers all activities on the landscape, and can leverage resources that might not be available for single agency projects. Greater Sage-Grouse initiatives from the Wyoming Landscape Conservation Initiative have included habitat enhancement efforts (e.g., invasive weed treatment, prescribed grazing strategies), and Greater Sage-Grouse research studies (Wyoming Landscape Conservation Initiative 2013).

Powder River Basin Restoration Program

The Powder River Basin Restoration Program is a collaborative partnership to restore and enhance Greater Sage-Grouse habitat on a landscape level in the Powder River Basin. The basin encompasses 13,493,840 acres in northeast Wyoming and southeast Montana. Surface ownership is composed of approximately 70 percent private lands, 14 percent BLM-administered lands (including 8 percent in Wyoming and 6 percent in Montana), 8 percent Forest Service lands, and 8 percent States of Wyoming and Montana lands. Subsurface mineral ownership is 50 to 60 percent federal (BLM 2014).

The Powder River Basin Restoration Program is focusing on areas affected by the federal oil and gas development that has occurred over the past decade in the Powder River Basin in northeastern Wyoming. Its objectives are restoring or enhancing disturbed previously suitable habitat to suitable habitat for sagebrush obligate species, primarily Greater Sage-Grouse. This includes multiple sites affected by coal bed natural gas abandonment reclamation efforts, wildfires, and noxious and invasive plants. Priority will be given to those areas recognized as priority habitats (e.g., core population areas and connectivity corridors).

Habitat objectives are meeting the needs for nesting, brood-rearing, and late brood-rearing. The program would contribute to efforts focused on the management and control of mosquitoes carrying West Nile virus and would include funding, labor, treatment locations, and other needs as determined.

Additionally, efforts would be coordinated to reduce fuels in and near Greater Sage-Grouse habitat, to enhance sagebrush stands, support restoration efforts, and reduce the risk of high-severity wildfire. Pine stands and juniper woodlands would be managed for structural diversity and to reduce fuels, especially near PHMA, human developments, and recreation areas.

Natural Resource Conservation Service Sage-Grouse Initiative

The US Department of Agriculture, NRCS Sage-Grouse Initiative (SGI) is working with private landowners in 11 western states to improve habitat for Greater Sage-Grouse (Manier et al. 2013). With 13.5 million acres of Greater Sage-Grouse habitat in private ownership within MZ II/VII (Manier et al. 2013, p. 118), a unique opportunity exists for the NRCS to benefit Greater Sage-Grouse and to ensure the persistence of large and intact rangelands by implementing the SGI.

Participation in the SGI program is voluntary, but willing participants enter into binding contracts or easements to ensure that conservation practices that enhance Greater Sage-Grouse habitat, such as fence marking, protecting riparian areas, and maintaining vegetation in nesting areas, are implemented. Participating landowners are bound by a contract (usually 3 to 5 years) to implement, in consultation with NRCS staff, conservation practices if they wish to receive the financial incentives offered by the SGI. These financial incentives generally take the form of payments to offset costs of implementing conservation practices and easements or rental payments for long-term conservation.

While potentially effective at conserving Greater Sage-Grouse populations and habitat on private lands, incentive-based conservation programs that fund the SGI generally require reauthorization from Congress under subsequent farm bills, meaning future funding is not guaranteed.

COT Objective 5: Development of Monitoring Plans

> *"A robust range-wide monitoring program must be developed and implemented for sage-grouse conservation plans, which recognizes and incorporates individual state approaches. A monitoring program is necessary to track the success of conservation plans and proactive conservation activities. Without this information, the actual benefit of conservation activities cannot be measured and there is no capacity to adapt if current management actions are determined to be ineffective." (COT report 2013)*

The Greater Sage-Grouse Monitoring Framework

Introduction

The purpose of this Greater Sage-Grouse Monitoring Framework (hereafter, monitoring framework) is to describe the methods to monitor habitats and evaluate the implementation and effectiveness of the BLM planning strategy (BLM IM 2012-044) to conserve the species and its habitat. The regulations for the BLM (43 CFR 1610.4-9) require that land use plans establish intervals and standards, as appropriate, for monitoring and evaluations, based on the sensitivity of the resource to the decisions involved. Therefore, the BLM will use the methods described herein to collect monitoring data to evaluate implementation and effectiveness of the Greater Sage-Grouse (hereafter, sage-grouse) planning strategy and the conservation measures contained in land use plans. The type of monitoring data to be collected at the land use plan scale will be described in the monitoring plan, which will be developed after the signing of the ROD. For a summary of the frequency of reporting see Attachment A. Adaptive management will be informed by data collected at any and all scales.

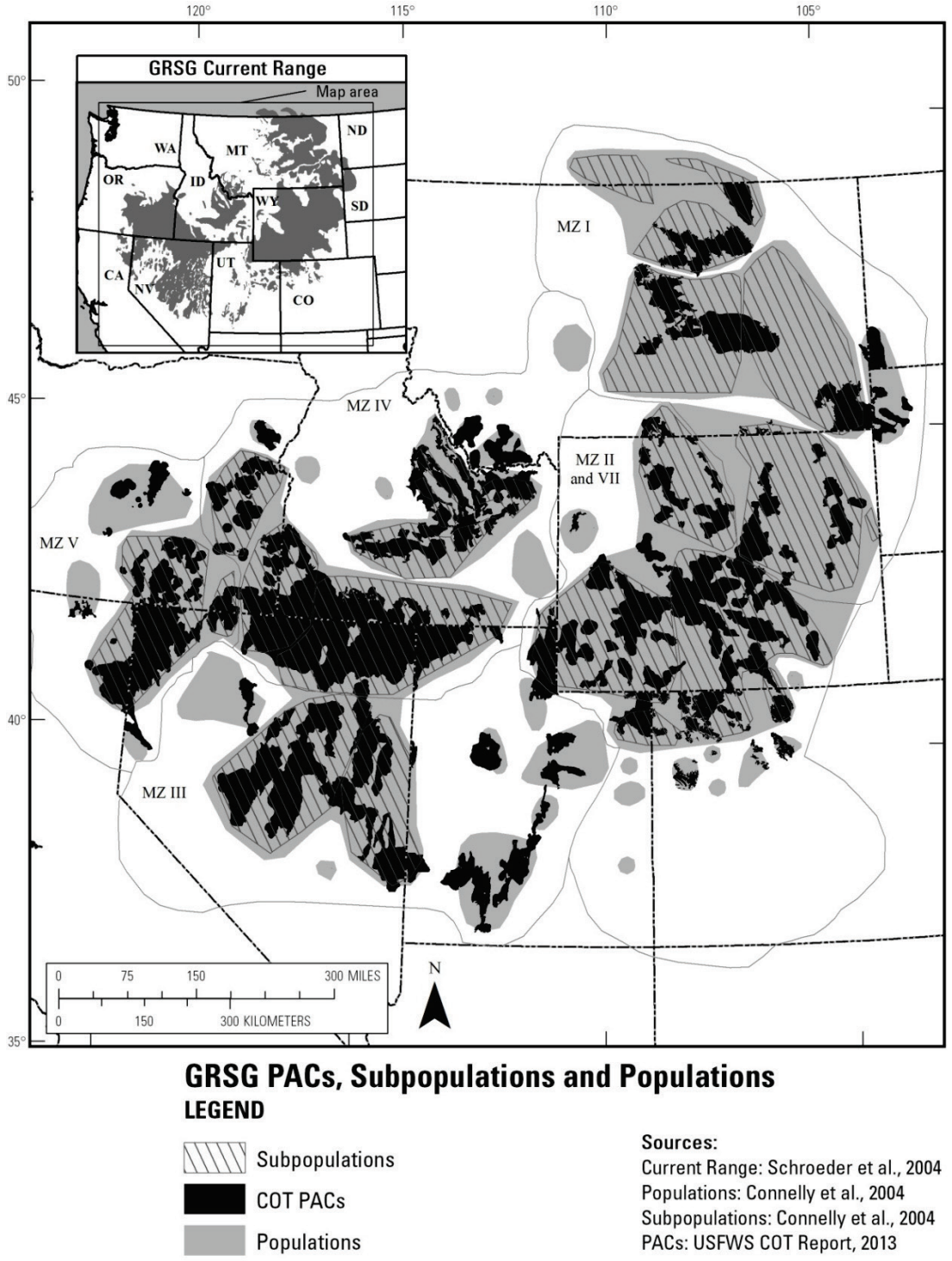
To ensure the BLM has the ability to make consistent assessments about sage-grouse habitats across the range of the species, this framework lays out the methodology for monitoring the implementation and evaluating the effectiveness of BLM actions to conserve the species and its habitat through monitoring that informs effectiveness at multiple scales. Monitoring efforts will include data for measurable quantitative indicators of sagebrush availability, anthropogenic disturbance levels, and sagebrush conditions. Implementation monitoring results will provide information to allow the BLM to evaluate the extent that decisions from the BLM RMP to conserve sage-grouse and its habitat have been implemented. Population monitoring information will be collected by state fish and wildlife agencies and will be incorporated into effectiveness monitoring as it is made available.

This multi-scale monitoring approach is necessary as sage-grouse are a landscape species and conservation is scale-dependent whereby conservation actions are implemented within seasonal habitats to benefit populations. The four orders of habitat selection (Johnson 1980) used in this monitoring framework are described by Connelly et al. (2003) and Stiver et al. (2014) as first order (broad scale), second order (mid-scale), third order (fine scale), and fourth order (site scale) to apply them to sage-grouse habitat selection. The various scales may show differences because of the methods used. The broad and mid-scale may provide a generalize direction, however the suitability baseline (pre-euro) is not considered an accurate baseline. The current baseline will provide better information on trends provided the data used in the analysis is sound. Based upon the management actions related to the BLM and Wyoming Sage-grouse Executive Order, the broad and mid-scale may greatly underestimate the impacts of the threats outlined in the COT report. Habitat selection and habitat use by sage-grouse occurs at multiple scales and is driven by multiple environmental and behavioral factors. Managing and monitoring sage-grouse habitats are complicated by the differences in habitat selection across the range and habitat utilization by individual birds within a given season. Therefore, the tendency to look at a single indicator of habitat suitability or only one scale limits the ability for managers to identify the threats to sage-grouse and to respond at the appropriate scale. For descriptions of these habitat suitability indicators for each scale, see the Sage-grouse Habitat Assessment Framework (HAF) (Stiver et al. *in press*).

Monitoring methods and indicators in this monitoring framework are derived from the current peer-reviewed science. Range wide best-available datasets for broad and mid-scale monitoring will be acquired. If these exiting datasets are not readily available or are inadequate, but are necessary to effectively inform the three

measurable quantitative indicators (sagebrush availability, anthropogenic disturbance levels, and sagebrush conditions), the BLM will strive to develop datasets or obtain information to fill these data gaps. Datasets that are not readily available to inform the fine and site scale indicators will be developed. These data will be used to generate monitoring reports at the appropriate and applicable geographic scales, boundaries and analysis units: across the range of sage-grouse as defined by Schroeder et al. (2004), and clipped by Western Association of Fish and Wildlife Agencies (WAFWA) Management Zone (MZ) (Stiver et al. 2006) boundaries and other areas as appropriate for size (e.g., populations based on Connelly et al. 2004; **Figure 1**). This broad and mid-scale monitoring data and analysis will provide context for ARMPA areas; states; Greater Sage-Grouse priority habitat, general habitat and other sage-grouse designated management areas; and PACs as defined in the Greater Sage-Grouse Conservation Objectives: Final Report (COT, U.S. Fish and Wildlife Service 2013). Throughout the remainder of the document, all of these areas will be referred to as "sage-grouse areas."

Figure 1. Map of Greater Sage-Grouse Range, Populations, Subpopulations and Priority Areas for Conservation as of 2013



This monitoring framework is divided into two sections. The broad- and mid-scale methods, described in the following section, provide a consistent approach across the range of the species to monitor implementation decisions and actions, mid-scale habitat attributes (e.g., sagebrush availability and habitat degradation), and population changes to determine the effectiveness of the planning strategy and management decisions. (See **Table 2**, Indicators for monitoring implementation of the national planning strategy, ARMPA decisions, sage-grouse habitat, and sage-grouse populations at the broad and mid scales.) For sage-grouse habitat at the fine

and site scales, this monitoring framework describes a consistent approach (e.g., indicators and methods) for monitoring sage-grouse seasonal habitats. Funding, support, and dedicated personnel for broad- and mid-scale monitoring will be renewed annually through the normal budget process. For an overview of BLM multiscale monitoring commitments, see Attachment A.

Table 2. Indicators for Monitoring Implementation of the Strategy, Decisions, Sage-grouse Habitat, and Sage-grouse Populations at the Broad and Mid-scales.

	Implementation	Habitat		Population (State Wildlife Agencies)
Geographic Scales		**Availability**	**Degradation**	**Demographics**
Broad Scale: From the range of sage-grouse to WAFWA Management Zones	BLM Planning Strategy goal and objectives	Distribution and amount of sagebrush within the range	Distribution and amount of energy, mining and infrastructure facilities	WAFWA Management Zone population trend
Mid-scale: From WAFWA Management Zone to populations.	An analysis of ARMPA decisions across the designated scale	Mid-scale habitat indicators (HAF 2014; **Table 3** e.g., percent of sagebrush per unit area)	Distribution and amount of energy, mining and infrastructure facilities (**Table 3**)	Individual population trend
Fine Scale: Pacs	A summary of DDCT actions related to BLM mineral and surface resources in conjunction with other ownerships	Areas that have greater than 5% sagebrush cover and non-habitat (unsuitable) that is less than 0.6miles from the suitable habitat.	Distribution and amount of anthropogenic disturbances and wildfire occurrences impacting specific PACs.	PAC Trends
Site Scale DDCT level	A summary of DDCT actions related to BLM mineral and surface resources.	The available occupied habitat using the DDCT process.	Distribution and amount of anthropogenic disturbances and wildfire occurrences impacting specific PACs.	Individual lek Trends
Broad Scale: From the range of sage-grouse to WAFWA Management Zones	BLM Planning Strategy goal and objectives	Distribution and amount of sagebrush within the range	Distribution and amount of energy, mining and infrastructure facilities	WAFWA Management Zone population trend
Mid-scale: From WAFWA Management Zone to populations. PACs	RMP decisions	Mid-scale habitat indicators (HAF 2014; **Table 3** e.g., percent of sagebrush per unit area)	Distribution and amount of energy, mining and infrastructure facilities (**Table 3**)	Individual population trend

Broad and Mid-Scales

First-order habitat selection, the broad scale, describes the physical or geographical range of a species. The first-order habitat of the sage-grouse is defined by populations of sage-grouse associated with sagebrush landscapes, based on Schroeder et al. 2004, and Connelly et al.

2004, and on population or habitat surveys since 2004. An intermediate scale between the broad and mid scales was delineated by WAFWA from floristic provinces within which similar environmental factors

influence vegetation communities. This scale is referred to as the WAFWA Sage-Grouse Management Zones (MZs). Although no indicators are specific to this scale, these MZs are biologically meaningful as reporting units.

Second-order habitat selection, the mid-scale, includes sage-grouse populations and PACs. The second order includes at least 40 discrete populations and subpopulations (Connelly et al. 2004). Populations range in area from 150 to 60,000 mi2 and are nested within MZs. PACs range from 20 to 20,400 mi2 and are nested within population areas.

Other mid-scale landscape indicators, such as patch size and number, patch connectivity, linkage areas, and landscape matrix and edge effects (Stiver et al. *in press*) will also be assessed. The methods used to calculate these metrics will be derived from existing literature (Knick et al. 2011, Leu and Hanser 2011, Knick and Hanser 2011).

Midscale indicators using the HAF can grossly underestimate the occupation of anthropogenic activities because of the use of 30m pixels. The HAF removes 'non-'habitat from the suitability availability. There are no parameters that are provided to protect adjacent suitable habitat from development on these non-habitat parcels, thus making the adjacent non-habitat a potential threat by indirect impacts.

The Wyoming BLM field offices will be actively participating in a fine and site scale monitoring that will more accurately reflect the impacts associated with direct and indirect effects of anthropogenic and wildfire impacts.

A. Implementation (Decision) Monitoring

Implementation monitoring is the process of tracking and documenting the implementation (or the progress toward implementation) of ARMPA decisions. The BLM will monitor implementation of project-level and/or site-specific actions and authorizations, with their associated conditions of approval/stipulations for sage-grouse, spatially (as appropriate) within Priority Habitat, General Habitat, and other sage-grouse designated management areas, at a minimum, for the Wyoming Greater Sage-Grouse ARMPA planning area. These actions and authorizations, as well as progress toward completing and implementing activity-level plans, will be monitored consistently across all planning units and will be reported to BLM headquarters annually, as well as reported to the State of Wyoming with numerical and spatial data twice a year, and a HQ summary report every 5 years, for the respective planning area. A national-level Greater Sage-Grouse Land Use Plan Decision Monitoring and Reporting Tool is being developed to describe how the BLM will consistently and systematically monitor and report implementation-level activity plans and implementation actions for all plans within the range of sage-grouse. A description of this tool for collection and reporting of tabular and spatially explicit data will be included in the Record of Decision or approved plan. The BLM will provide data that can be integrated with other conservation efforts conducted by state and federal partners.

B. Habitat (Vegetation) Monitoring

The U.S. Fish and Wildlife Service (USFWS), in its 2010 listing decision for the sage-grouse, identified 18 threats contributing to the destruction, modification, or curtailment of sage-grouse habitat or range (75 FR 13910 2010). The BLM will, therefore, monitor the relative extent of these threats that remove sagebrush, both spatially and temporally, on all lands within an analysis area, and will report on amount, pattern, and condition at the appropriate and applicable geographic scales and boundaries. These 18 threats have been aggregated into three broad- and mid-scale measures to account for whether the threat predominantly removes sagebrush or degrades habitat. (See **Table 3**, Relationship between the 18 threats and the three habitat disturbance measures for monitoring.) The three measures are:

1. Sagebrush Availability (percent of sagebrush per suitable unit area)

2. Habitat Degradation (percent of human activity per unit area)

3. Energy and Mining Density (facilities and locations per suitable unit area)

These three habitat disturbance measures will evaluate disturbance on all lands within priority habitat, regardless of land ownership. The direct area of influence will be assessed with the goal of accounting for actual removal of sagebrush on which sage-grouse depend (Connelly et al. 2000) and for habitat degradation as a surrogate for human activity. Measure 1 (sagebrush availability) examines where disturbances have removed plant communities that support sagebrush (or have broadly removed sagebrush from the landscape). Measure 1, therefore, monitors the change in sagebrush availability–or, specifically, where and how much of the sagebrush community is available on lands that can support sagebrush within the range of sage-grouse. The sagebrush community is defined as the ecological systems that have the capability of supporting sagebrush vegetation and seasonal sage-grouse habitats within the range of sage-grouse (see Section B.1., Sagebrush Availability). Measure 2 (see Section B.2., Habitat Degradation Monitoring) and Measure 3 (see Section B.3., Energy and Mining Density) focus on where habitat degradation is occurring within suitable sagebrush soils by using the footprint/area of direct disturbance and the number of facilities at the mid-scale to identify the relative amount of degradation per geographic area of interest and in areas that have the capability of supporting sagebrush and seasonal sage-grouse use. Measure 2 (habitat degradation) not only quantifies footprint/area of direct disturbance but also establishes a surrogate for those threats most likely to have ongoing activity. Because energy development and mining activities are typically the most intensive activities in sagebrush habitat, Measure 3 (the density of active energy development, production, and mining sites) will help identify areas of particular concern for such factors as noise, dust, traffic, etc. that degrade sage-grouse habitat.

Table 3. Relationship between the 18 Threats and the Three Habitat Disturbance Measures for Monitoring.

USFWS Listing Decision Threat	Sagebrush Availability	Habitat Degradation	Density of Energy and Mining
Agriculture	X		
Urbanization	X		
Wildfire	X		
Conifer encroachment	X		
Treatments	X		
Invasive Species	X		
Energy (oil and gas wells and development facilities)		X	X
Energy (coal mines)		X	X
Energy (wind towers)		X	X
Energy (solar fields)		X	X
Energy (geothermal)		X	X
Mining (active locatable, leasable, and salable developments)		X	X
Infrastructure (roads)		X	
Infrastructure (railroads)		X	
Infrastructure (power lines)		X	
Infrastructure (communication towers)		X	
Infrastructure (other vertical structures)		X	
Other developed rights of ways		X	

Data availability may preclude specific analysis of individual layers. See the detailed methodology for more information.

The methods to monitor disturbance found herein differ slightly from methods used in the Sage-Grouse Baseline Environmental Report (BER; Manier et al. 2013) that provided a baseline of datasets of disturbance across jurisdictions. One difference is that, for some threats, the data in the BER were for federal lands only. In addition, threats were assessed individually in that report, using different assumptions from those in this monitoring framework about how to quantify the location and magnitude of threats. The methodology herein builds on the BER methodology and identifies datasets and procedures to utilize the best available data across the range of the sage-grouse and to formulate a consistent approach to quantify impact of the threats through time. This methodology also describes an approach to combine the threats and calculate the three measures.

B.1. Sagebrush Availability (Measure 1)

Sage-grouse populations have been found to be more resilient where a percentage of the landscape is maintained in sagebrush (Knick and Connelly 2011), which will be determined by sagebrush availability. Measure 1 has been divided into two sub-measures to describe sagebrush availability on the landscape:

Measure 1a: the current amount of sagebrush on the geographic area of interest, and
Measure 1b: the amount of sagebrush on the geographic area of interest compared with the amount of sagebrush the landscape of interest could ecologically support.

Measure 1a (the current amount of sagebrush on the landscape) will be calculated using this formula: [the existing updated sagebrush layer] divided by [the geographic area of interest]. The appropriate geographic areas of interest for sagebrush availability include the species' range, WAFWA MZs, populations, and PACs. In some cases these sage-grouse areas will need to be aggregated to provide an estimate of sagebrush availability with an acceptable level of accuracy.

Measure 1b (the amount of sagebrush for context within the geographic area of interest) will be calculated using this formula: [existing sagebrush divided by [pre-EuroAmerican settlement geographic extent of lands that could have supported sagebrush]. This measure will provide information to set the context for a given geographic area of interest during evaluations of monitoring data. The information could also be used to inform management options for restoration or mitigation and to inform effectiveness monitoring.

The sagebrush base layer for Measure 1 will be based on geospatial vegetation data adjusted for the threats listed in **Table 3**. The following subsections of this monitoring framework describe the methodology for determining both the current availability of sagebrush on the landscape and the context of the amount of sagebrush on the landscape at the broad and mid scales.

a. Establishing the Sagebrush Base Layer: The current geographic extent of sagebrush vegetation within the rangewide distribution of sage-grouse populations will be ascertained using the most recent version of the Existing Vegetation Type (EVT) layer in LANDFIRE (2013). LANDFIRE EVT was selected to serve as the sagebrush base layer for five reasons: 1) it is the only nationally consistent vegetation layer that has been updated multiple times since 2001; 2) the ecological systems classification within LANDFIRE EVT includes multiple sagebrush type classes that, when aggregated, provide a more accurate (compared with individual classes) and seamless sagebrush base layer across jurisdictional boundaries; 3) LANDFIRE performed a rigorous accuracy assessment from which to derive the rangewide uncertainty of the sagebrush base layer; 4) LANDFIRE is consistently used in several recent analyses of sagebrush habitats (Knick et al. 2011, Leu and Hanser 2011, Knick and Hanser 2011); and 5) LANDFIRE EVT can be compared against the geographic extent of lands that are believed to have had the capability of supporting sagebrush vegetation pre-EuroAmerican settlement [LANDFIRE Biophysical Setting (BpS)]. This fifth reason provides a reference point for understanding how much sagebrush currently remains in a defined geographic area of interest compared with how much sagebrush existed historically (Measure 1b). Therefore, the BLM has determined that LANDFIRE provides the best available data at broad and mid scales to serve as a sagebrush base layer for monitoring changes in the geographic extent of sagebrush. The BLM, in addition to aggregating the

sagebrush types into the sagebrush base layer, will aggregate the accuracy assessment reports from LANDFIRE to document the cumulative accuracy for the sagebrush base layer. The BLM-through its Assessment, Inventory, and Monitoring (AIM) program and, specifically, the BLM's landscape monitoring framework (Taylor et al. 2014)-will provide field data to the LANDFIRE program to support continuous quality improvements of the LANDFIRE EVT layer. The sagebrush layer based on LANDFIRE EVT will allow for the mid-scale estimation of the existing percent of sagebrush across a variety of reporting units. This sagebrush base layer will be adjusted by changes in land cover and successful restoration for future calculations of sagebrush availability (Measures 1a and 1b).

This layer will also be used to determine the trend in other landscape indicators, such as patch size and number, patch connectivity, linkage areas, and landscape matrix and edge effects (Stiver et al. *in press*). In the future, changes in sagebrush availability, generated annually, will be included in the sagebrush base layer. The landscape metrics will be recalculated to examine changes in pattern and abundance of sagebrush at the various geographic boundaries. This information will be included in effectiveness monitoring (See Section D., Effectiveness Monitoring).

Within the BLM, field office–wide existing vegetation classification mapping and inventories are available that provide a much finer level of data than what is provided through LANDFIRE. Where available, these finer-scale products will be useful for additional and complementary mid-scale indicators and local-scale analyses (Fine and Site Scales). The fact that these products are not available everywhere limits their utility for monitoring at the broad and mid-scale, where consistency of data products is necessary across broader geographies.

The sagebrush layer based on LANDFIRE EVT will allow for the mid-scale estimation of existing percent sagebrush across a variety of reporting units. This sagebrush base layer will be adjusted by changes in land cover and successful restoration for future calculations of sagebrush availability (Measures 1a and 1b).

This layer will be used to determine the trend in other landscape indicators, e.g. patch size and number, patch connectivity, linkage areas, and landscape matrix and edge effects (Stiver et al. in press). In the future, changes in sagebrush availability, generated bi-annually, will be included in the sagebrush base layer. The landscape metrics will be recalculated to examine changes in pattern and abundance of sagebrush at the various geographic boundaries. This information will be included in effectiveness monitoring (See Section D).

Data Sources for Establishing and Monitoring Sagebrush Availability

In much the same manner as how the LANDFIRE data was selected as the data source, described above, the criteria for selecting the datasets (**Table 4**) for establishing and monitoring the change in sagebrush availability, Measure 1, were threefold:

Nationally consistent dataset available across the range
Known level of confidence or accuracy in the dataset
Continual maintenance of dataset and known update interval

Table 4. Datasets for Establishing and Monitoring Changes in Sagebrush Availability

Dataset	Source	Update Interval	Most Recent Version Year	Use
BioPhysical Setting (BpS) v1.1	LANDFIRE	Static	2008	Denominator for Sagebrush Availability (1.b.)
Existing Vegetation Type (EVT) v1.2	LANDFIRE	Static	2010	Numerator for Sagebrush Availability

Dataset	Source	Update Interval	Most Recent Version Year	Use
Cropland Data Layer (CDL)	National Agricultural Statistics Service (NASS)	Annual	2012	Agricultural Updates; removes existing sagebrush from numerator of sagebrush availability
National Land Cover Dataset (NLCD) Percent Imperviousness	Multi-Resolution Land Characteristics Consortium (MRLC)	5 Year	2011 available in March 2014	Urban Area Updates; removes existing sagebrush from numerator of sagebrush availability
Fire Perimeters	GeoMac	Annual	2013	< 1,000 acres Fire updates; removes existing sagebrush from numerator of sagebrush availability
Burn Severity	Monitoring Trends in Burn Severity (MTBS)	Annual	2012 available in April 2014	> 1,000 acres Fire Updates; removes existing sagebrush from numerator of sagebrush availability except for unburned sagebrush islands

LANDFIRE Existing Vegetation Type (EVT) Version 1.2:

LANDFIRE EVT represents existing vegetation types on the landscape derived from remote sensing data. Initial mapping was conducted using imagery collected in approximately 2001. Since the initial mapping there have been two update efforts: version 1.1 represents changes before 2008, and version 1.2 reflects changes on the landscape before 2010. Version 1.2 will be used as the starting point to develop the sagebrush base layer.

Ecological systems from the LANDFIRE EVT to be used in the sagebrush base layer were determined by sage-grouse subject matter experts through the identification of the ecological systems that have the capability of supporting sagebrush vegetation and could provide suitable seasonal habitat for the sage-grouse (**Table 5**). Two additional vegetation types that are not ecological systems were added to the EVT and are *Artemisia tridentata* ssp. *vaseyana* Shrubland Alliance and *Quercus gambelii* Shrubland Alliance. These alliances have species composition directly related to the Rocky Mountain Lower Montane - Foothill Shrubland ecological system and the Rocky Mountain Gambel Oak-Mixed Montane Shrubland ecological system, both of which are ecological systems in LANDFIRE BpS. In LANDFIRE EVT however, in some map zones, the Rocky Mountain Lower Montane - Foothill Shrubland ecological system and the Rocky Mountain Gambel Oak-Mixed Montane Shrubland ecological system were named *Artemisia tridentata* ssp. *vaseyana* Shrubland Alliance and *Quercus gambelii* Shrubland Alliance respectively.

Table 5. Ecological Systems in BpS and EVT Capable of Supporting Sagebrush Vegetation and Could Provide Suitable Seasonal Habitat for Greater Sage-Grouse.

Ecological System	Sagebrush Vegetation that the Ecological System has the Capability to Produce
Colorado Plateau Mixed Low Sagebrush Shrubland	*Artemisia arbuscula* ssp. *longiloba* *Artemisia bigelovii* *Artemisia nova* *Artemisia frigida* *Artemisia tridentata* ssp. *wyomingensis*

Ecological System	Sagebrush Vegetation that the Ecological System has the Capability to Produce
Columbia Plateau Scabland Shrubland	*Artemisia rigida*
Great Basin Xeric Mixed Sagebrush Shrubland	*Artemisia arbuscula* ssp. *longicaulis* *Artemisia arbuscula* ssp. *longiloba* *Artemisia nova* *Artemisia tridentata* ssp. *wyomingensis*
Inter-Mountain Basins Big Sagebrush Shrubland	*Artemisia tridentata* ssp. *tridentata* *Artemisia tridentata* ssp. *xericensis* *Artemisia tridentata* ssp. *vaseyana* *Artemisia tridentata* ssp. *wyomingensis*
Inter-Mountain Basins Mixed Salt Desert Scrub	*Artemisia tridentata* ssp. *wyomingensis* *Artemisia spinescens*
Wyoming Basins Dwarf Sagebrush Shrubland and Steppe	*Artemisia arbuscula* ssp. *longiloba* *Artemisia nova* *Artemisia tridentata* ssp. *wyomingensis* *Artemisia tripartita* ssp. *rupicola*
Columbia Plateau Low Sagebrush Steppe	*Artemisia arbuscula* *Artemisia arbuscula* ssp. *longiloba* *Artemisia nova*
Inter-Mountain Basins Big Sagebrush Steppe	*Artemisia cana* ssp. *cana* *Artemisia tridentata* ssp. *tridentata* *Artemisia tridentata* ssp. *xericensis* *Artemisia tridentata* ssp. *wyomingensis* *Artemisia tripartita* ssp. *tripartita* *Artemisia frigida*
Inter-Mountain Basins Montane Sagebrush Steppe	*Artemisia tridentata* ssp. *vaseyana* *Artemisia tridentata* ssp. *wyomingensis* *Artemisia nova* *Artemisia arbuscula* *Artemisia tridentata* ssp. *spiciformis*
Northwestern Great Plains Mixed grass Prairie	*Artemisia cana* ssp. *cana* *Artemisia tridentata* ssp. *vaseyana* *Artemisia frigida*
Northwestern Great Plains Shrubland	*Artemisia cana* ssp. *cana* *Artemisia tridentata* ssp. *tridentata* *Artemisia tridentata* ssp. *wyomingensis*
Western Great Plains Sand Prairie	*Artemisia cana* ssp. *cana*
Western Great Plains Floodplain Systems	*Artemisia cana* ssp. *cana*
Columbia Plateau Steppe and Grassland	*Artemisia* spp.
Inter-Mountain Basins Semi-Desert Shrub-Steppe	*Artemisia tridentata* *Artemisia bigelovii* *Artemisia tridentata* ssp. *wyomingensis*
Rocky Mountain Lower Montane-Foothill Shrubland	*Artemisia nova* *Artemisia tridentata* *Artemisia frigida*

Ecological System	Sagebrush Vegetation that the Ecological System has the Capability to Produce
Rocky Mountain Gambel Oak-Mixed Montane Shrubland	*Artemisia tridentata*
Inter-Mountain Basins Curl-Leaf Mountain Mahogany Woodland and Shrubland	*Artemisia tridentata* ssp. *vaseyana* *Artemisia arbuscula* *Artemisia tridentata*
Artemisia tridentata ssp. *vaseyana* Shrubland Alliance (EVT only)	*Artemisia tridentata* ssp. *vaseyana*
Quercus gambelii Shrubland Alliance (EVT only)	*Artemisia tridentata*

Accuracy and Appropriate Use of LANDFIRE Datasets:

Because of concerns over the thematic accuracy of individual classes mapped by LANDFIRE, all ecological systems listed in **Table 5** will be merged into one value that represents the sagebrush base layer. With all ecological systems aggregated, the combined accuracy of the sagebrush base layer (EVT) will be much greater than if all categories were treated separately.

LANDFIRE performed the original accuracy assessment of their EVT product on a map zone basis. There are 20 LANDFIRE map zones that cover the historic range of sage-grouse as defined by Schroeder (2004). Attachment C lists the user and producer accuracies for the aggregated ecological systems that make up the sagebrush base layer and also defines user and producer accuracies. The aggregated sagebrush base layer for monitoring had producer accuracies ranging from 56.7% to 100% and user accuracies ranging from 57.1% to 85.7%.

LANDFIRE EVT data are not designed to be used at a local level. In reports of the percent sagebrush statistic for the various reporting units (Measure 1a), the uncertainty of the percent sagebrush will increase as the size of the reporting unit gets smaller. LANDFIRE data should never be used at the 30m pixel level (900m2 resolution of raster data) for any reporting. The smallest geographic extent for using the data to determine percent sagebrush is at the PAC level; for the smallest PACs, the initial percent sagebrush estimate will have greater uncertainties compared with the much larger PACs.

Agricultural Adjustments for the Sagebrush Base Layer: The dataset for the geographic extent of agricultural lands will come from the National Agricultural Statistics Service (NASS) Cropland Data Layer (CDL) (http://www.nass.usda.gov/research/Cropland/Release/index.htm). CDL data are generated annually, with estimated producer accuracies for "large area row crops ranging from the mid 80% to mid-90%," depending on the state (http://www.nass.usda.gov/research/ Cropland/sarsfaqs2.htm#Section3_18.0). Specific information on accuracy may be found on the NASS metadata website (http://www.nass.usda.gov/research/Cropland/metadata/meta.htm). CDL provided the only dataset that matches the three criteria (nationally consistent, known level of accuracy, and periodically updated) for use in this monitoring framework and represents the best available agricultural lands mapping product.

The CDL data contain both agricultural classes and nonagricultural classes. For this effort, and in the baseline environmental report (Manier et al. 2013), nonagricultural classes were removed from the original dataset. The excluded classes are: Barren (65 & 131), Deciduous Forest (141), Developed/High Intensity (124), Developed/Low Intensity (122), Developed/Med Intensity (123), Developed/Open Space (121), Evergreen Forest (142), Grassland Herbaceous (171), Herbaceous Wetlands (195), Mixed Forest (143), Open Water (83 & 111), Other Hay/Non Alfalfa (37), Pasture/Hay (181), Pasture/Grass (62), Perennial Ice/Snow (112), Shrubland (64 & 152), Woody Wetlands (190).

The rule set for adjusting the sagebrush base layer for agricultural lands (and for updating the base layer for agricultural lands in the future) is that once an area is classified as agriculture in any year of the CDL, those

pixels will remain out of the sagebrush base layer even if a new version of the CDL classifies that pixel as one of the nonagricultural classes listed above. The assumption is that even though individual pixels may be classified as a nonagricultural class in any given year, the pixel has not necessarily been restored to a natural sagebrush community that would be included in **Table 5**. A further assumption is that once an area has moved into agricultural use, it is unlikely that the area would be restored to sagebrush. Should that occur, however, the method and criteria for adding pixels back into the sagebrush base layer would follow those found in the sagebrush restoration monitoring section of this monitoring framework

Urban Adjustments for the Sagebrush Base Layer

The National Land Cover Dataset (NLCD) Percent Imperviousness was selected as the best available dataset to be used for urban updates. These data are generated on a five-year cycle and specifically designed to support monitoring efforts. Other datasets were evaluated and lacked the spatial specificity that was captured in the NLCD product. Any new impervious pixel will be removed from the sagebrush base layer during the update process. Although the impervious surface layer includes a number of impervious pixels outside of urban areas, there are two reasons why this is acceptable for this process. First, an evaluation of national urban area datasets did not reveal a layer that could be confidently used in conjunction with the NLCD product to screen impervious pixels outside of urban zones because unincorporated urban areas were not being included thus leaving large chunks of urban pixels unaccounted for in this rule set. Secondly, experimentation with setting a threshold on the percent imperviousness layer that would isolate rural features proved to be unsuccessful. No combination of values could be identified that would result in the consistent ability to limit impervious pixels outside urban areas. Therefore, to ensure consistency in the monitoring estimates, it was determined to include all impervious pixels.

Fire Adjustments for the Sagebrush Base Layer:

Two datasets were selected for performing fire adjustments and updates: GeoMac fire perimeters and Monitoring Trends in Burn Severity (MTBS). An existing data standard in the BLM requires that all fires of more than 10 acres are to be reported to GeoMac; therefore, there will be many small fires of less than 10 acres that will not be accounted for in the adjustment and monitoring attributable to fire. Using fire perimeters from GeoMac, all sagebrush pixels falling within the perimeter of fires less than 1,000 acres will be used to adjust and monitor the sagebrush base layer.

For fires greater than 1,000 acres, MTBS was selected as a means to account for unburned sagebrush islands during the update process of the sagebrush base layer. The MTBS program (http://www.mtbs.gov) is an ongoing, multiyear project to map fire severity and fire perimeters consistently across the United States. One of the burn severity classes within MTBS is an unburned to low-severity class. This burn severity class will be used to represent unburned islands of sagebrush within the fire perimeter for the sagebrush base layer. Areas within the other severity classes within the fire perimeter will be removed from the base sagebrush layer during the update process. Not all wildfires, however, have the same impacts on the recovery of sagebrush habitat, depending largely on soil moisture and temperature regimes. For example, cooler, moister sagebrush habitat has a higher potential for recovery or, if needed, restoration than does the warmer, dryer sagebrush habitat. These cooler, moister areas will likely be detected as sagebrush in future updates to LANDFIRE.

Conifer Encroachment Adjustment for the Sagebrush Base Layer:

Conifer encroachment into sagebrush vegetation reduces the spatial extent of sage-grouse habitat (Davies et al. 2011, Baruch-Mordo et al. 2013). Conifer species that show propensity for encroaching into sagebrush vegetation resulting in sage-grouse habitat loss include various juniper species, such as Utah juniper (*Juniperus osteosperma*), western juniper (*Juniperus occidentalis*), Rocky Mountain juniper (*Juniperus scopulorum*), pinyon species, including singleleaf pinyon (*Pinus monophylla*) and pinyon pine (*Pinus edulis*), ponderosa pine (*Pinus ponderosa*), lodgepole pine (*Pinus contorta*), and Douglas fir (*Pseudotsuga menziesii*) (Gruell et al. 1986, Grove et al. 2005, Davies et al. 2011).

A rule set for conifer encroachment was developed to be used for determination of the existing sagebrush base layer. To capture the geographic extent of sagebrush that is likely to experience conifer encroachment,

ecological systems within LANDFIRE EVT version 1.2 (NatureServe 2011) were identified if they have the capability of supporting the conifer species (listed above) and have the capability of supporting sagebrush vegetation. Those ecological systems (**Table 6**) were deemed to be the plant communities with conifers most likely to encroach into sagebrush vegetation. Sagebrush vegetation was defined as including sagebrush species (Attachment B) that provide habitat for the Greater Sage-Grouse and are included in the Sage-Grouse Habitat Assessment Framework. An adjacency analysis was conducted to identify all sagebrush pixels that were directly adjacent to these conifer ecological systems and these immediately adjacent sagebrush pixels were removed from the sagebrush base layer.

Table 6. Ecological Systems with Conifers Most Likely to Encroach into Sagebrush Vegetation

EVT Ecological Systems	Coniferous Species and Sagebrush Vegetation that the Ecological System has the Capability to Produce
Colorado Plateau Pinyon-Juniper Woodland	*Pinus edulis* *Juniperus osteosperma* *Artemisia tridentata* *Artemisia arbuscula* *Artemisia nova* *Artemisia tridentata ssp. tridentata* *Artemisia tridentata ssp. wyomingensis* *Artemisia tridentata ssp. vaseyana* *Artemisia bigelovii* *Artemisia pygmaea*
Columbia Plateau Western Juniper Woodland and Savanna	*Juniperus occidentalis* *Pinus ponderosa* *Artemisia tridentata* *Artemisia arbuscula* *Artemisia rigida* *Artemisia tridentata ssp. vaseyana*
East Cascades Oak-Ponderosa Pine Forest and Woodland	*Pinus ponderosa* *Pseudotsuga menziesii* *Artemisia tridentata* *Artemisia nova*
Great Basin Pinyon-Juniper Woodland	*Pinus monophylla* *Juniperus osteosperma* *Artemisia arbuscula* *Artemisia nova* *Artemisia tridentata* *Artemisia tridentata ssp. vaseyana*
Northern Rocky Mountain Ponderosa Pine Woodland and Savanna	*Pinus ponderosa* *Artemisia tridentata* *Artemisia arbuscula* *Artemisia tridentata ssp. vaseyana*
Rocky Mountain Foothill Limber Pine-Juniper Woodland	*Juniperus osteosperma* *Juniperus scopulorum* *Artemisia nova* *Artemisia tridentata*

EVT Ecological Systems	Coniferous Species and Sagebrush Vegetation that the Ecological System has the Capability to Produce
Rocky Mountain Poor-Site Lodgepole Pine Forest	*Pinus contorta* *Pseudotsuga menziesii* *Pinus ponderosa* *Artemisia tridentata*
Southern Rocky Mountain Pinyon-Juniper Woodland	*Pinus edulis* *Juniperus monosperma* *Artemisia bigelovii* *Artemisia tridentata* *Artemisia tridentata ssp. wyomingensis* *Artemisia tridentata ssp.vaseyana*
Southern Rocky Mountain Ponderosa Pine Woodland	*Pinus ponderosa* *Pseudotsuga menziesii* *Pinus edulis* *Pinus contorta* *Juniperus spp.* *Artemisia nova* *Artemisia tridentata* *Artemisia arbuscula* *Artemisia tridentata ssp. vaseyana*

Invasive Annual Grasses Adjustments for the Sagebrush Base Layer: There are no invasive species datasets from 2010 to the present (beyond the LANDFIRE data) that meet the three criteria (nationally consistent, known level of accuracy, and periodically updated) for use in the determination of the sagebrush base layer. For a description of how invasive species land cover will be incorporated in the sagebrush base layer in the future, see Monitoring Sagebrush Availability.

Sagebrush Restoration Adjustments for the Sagebrush Base Layer: There are no datasets from 2010 to the present that could provide additions to the sagebrush base layer from restoration treatments that meet the three criteria (nationally consistent, known level of accuracy, and periodically updated); therefore, no adjustments were made to the sagebrush base layer calculated from the LANDFIRE EVT (version 1.2) attributable to restoration activities since 2010. Successful restoration treatments before 2010 are assumed to have been captured in the LANDFIRE refresh.

a. Monitoring Sagebrush Availability

Updating the Sagebrush Availability Sagebrush Base Layer

Sagebrush availability will be updated annually by incorporating changes to the sagebrush base layer attributable to agriculture, urbanization, and wildfire. The monitoring schedule for the existing sagebrush base layer updates is as follows:

2010 Existing Sagebrush Base Layer = [Sagebrush EVT] minus [2006 Imperviousness Layer] minus [2009 and 2010 CDL] minus [2009/10 GeoMac Fires < 1,000 acres] minus [2009/10 MTBS Fires excluding unburned sagebrush islands] minus [Conifer Encroachment Layer]

2012 Existing Sagebrush Update = [Base 2010 Existing Sagebrush Layer] minus [2011 Imperviousness Layer] minus [2011 and 2012 CDL] minus [2011/12 GeoMac Fires < 1,000 acres] minus [2011/12 MTBS Fires that are greater than 1,000 acres, excluding unburned sagebrush islands within the perimeter]

2013 and beyond Existing Sagebrush Updates = [Previous Existing Sagebrush Update Layer] minus [Imperviousness Layer (if new data are available)] minus [Next 2 years of CDL] minus [Next 2 years of GeoMac Fires < 1,000 acres] minus [Next 2 years MTBS Fires that are greater than 1,000 acres, excluding unburned sagebrush islands within the perimeter] plus [restoration/monitoring data provided by the field]

Sagebrush Restoration Updates

Restoration after fire, after agricultural conversion, after seedings of introduced grasses, or after treatments of pinyon pine and/or juniper, are examples of updates to the sagebrush base layer that can add sagebrush vegetation back in. When restoration has been determined to be successful through range wide, consistent, interagency fine and site-scale monitoring, the polygonal data will be used to add sagebrush pixels back into the broad and mid-scale sagebrush base layer.

Measure 1b – Context for the change in the amount of sagebrush in a landscape of interest

Measure 1b describes the amount of sagebrush on the landscape of interest compared with the amount of sagebrush the landscape of interest could ecologically support. Areas with the potential to support sagebrush were derived from the BpS data layer that describes sagebrush pre Euro-American settlement (biophysical setting (BpS) v1.2 of LANDFIRE). This measure (1b) will provide information during evaluations of monitoring data to set the context for a given geographic area of interest. The information could also be used to inform management options for restoration, mitigation and inform effectiveness monitoring.

The identification and spatial locations of natural plant communities (vegetation) that are believed to have existed on the landscape (BpS) were constructed based on an approximation of the historical (pre Euro-American settlement) disturbance regime and how the historical disturbance regime operated on the current biophysical environment. BpS is composed of map units which are based on NatureServe's (2011) terrestrial ecological systems classification.

The ecological systems within BpS used for this monitoring framework are those ecological systems that have the capability of supporting sagebrush vegetation and could provide seasonal habitat for the sage-grouse. These ecological systems are listed in **Table 5** with the exception of the *Artemisia tridentata* ssp. *vaseyana* Shrubland Alliance and the *Quercus gambelii* Shrubland Alliance. Ecological systems selected included sagebrush species or subspecies that are included in the Sage-Grouse Habitat Assessment Framework and are found in Attachment B.

Attributable to the lack of any reference data, the BpS layer does not have an associated accuracy assessment. Visual inspection, however, of the BpS data reveals inconsistencies in the labeling of pixels among LANDFIRE map zones. The reason for these inconsistencies between map zones are the decision rules used to map a given ecological system will vary between map zones based on different physical, biological, disturbance and atmospheric regimes of the region. This can result in artificial edges in the map that are an artifact of the mapping process. However, metrics will be calculated at broad spatial scales using BpS potential vegetation type, not small groupings or individual pixels, therefore, the magnitude of these observable errors in the BpS layer is minor compared with the size of the reporting units. Therefore, since BpS will be used to identify broad landscape patterns of dominant vegetation, these inconsistencies will only have a minor impact on the percent sagebrush availability calculation.

LANDFIRE BpS data are not designed to be used at a local level. In reporting the percent sagebrush statistic for the various reporting units, the uncertainty of the percent sagebrush will increase as the size of the reporting unit gets smaller. LANDFIRE data should never be used at the pixel level (30m2) for any reporting. The smallest geographic extent use of the data for this purpose is at the PAC level and for the smallest PACs the initial percent sagebrush remaining estimate will have greater uncertainties compared with the much larger PACs.

Tracking

BLM will analyze and monitor sagebrush availability (Measure 1) on a bi-annual basis and it will be used to inform effectiveness monitoring and initiate adaptive management actions as necessary. The 2010 estimate of sagebrush availability will serve as the base year and an updated estimate for 2012 will be reported in 2014 after all datasets become available. The 2012 estimate will capture changes attributable to fire, agriculture, and urban development. Subsequent updates will always include new fire and agricultural data and new urban data when available. Restoration data that meets criteria of adding sagebrush areas back into the sagebrush base layer will begin to be factored in as data allows. Attributable to data availability, there will be a two year lag (approximately) between when the estimate is generated and when the data used for the estimate becomes available (e.g., the 2014 sagebrush availability will be included in the 2016 estimate).

Future Plans

Geospatial data used to generate the sagebrush base layer will be available through BLM's EGIS Web Portal and Geospatial Gateway or through the authoritative data source. Legacy datasets will be preserved, so that trends may be calculated. Additionally, accuracy assessment data for all source datasets will be provided on the portal either spatially, where applicable, or through the metadata. Accuracy assessment information was deemed vital to share to help users understand the limitation of the sagebrush estimates and will be summarized spatially by map zone and included in the Portal.

LANDFIRE plans to begin a remapping effort in 2015. This remapping has the potential to greatly improve overall quality of the data products primarily through the use of higher quality remote sensing datasets. Additionally, BLM and the Multi-Resolution Land Characteristics Consortium (MRLC) are working to improve the accuracy of vegetation map products for broad and mid-scale analyses through the Grass/Shrub mapping effort in partnership with the MRLC. The Grass/Shrub mapping effort applies the Wyoming multi-scale sagebrush habitat methodology (Homer et al. 2009) to spatially depict fractional percent cover estimates for five components range and west-wide. These five components are percent cover of sagebrush vegetation, percent bare ground, percent herbaceous vegetation (grass and forbs combined), annual vegetation, and percent shrubs. One of the benefits of the design of these fractional cover maps is that they facilitate monitoring "with-in" class variation (e.g., examination of declining trend in sagebrush cover for individual pixels). This "with-in" class variation can serve as one indicator of sagebrush quality that cannot be derived from LANDFIRE's EVT information. The Grass/Shrub effort is not a substitute for fine scale monitoring, but will leverage fine scale data to support the validation of the mapping products. An evaluation will be conducted to determine if either dataset is of great enough quality to warrant replacing the existing sagebrush layers. The earliest possible date for this evaluation will not occur until 2018 or 2019 depending on data availability.

B.2. Habitat Degradation Monitoring (Measure 2)

The measure of habitat degradation will be calculated by combining the footprints of threats identified in **Table 3**. The footprint is defined as the direct area of influence of "active" energy and infrastructure; it is used as a surrogate for human activity. Although these analyses will try to summarize results at the aforementioned meaningful geographic areas of interest, some may be too small to report the metrics appropriately and may be combined (smaller populations, PACs within a population, etc.). Data sources for each threat are found in **Table 7**, Geospatial Data Sources for Habitat Degradation. Specific assumptions (inclusion criteria for data, width/area assumptions for point and line features, etc.) and methodology for each threat, and the combined measure, are detailed below. All datasets will be updated annually to monitor broad- and mid-scale year-to-year changes and to calculate trends in habitat degradation to inform adaptive management. A 5-year summary report will be provided to the USFWS.

a. Habitat Degradation Datasets and Assumptions

Energy (oil and gas wells and development facilities) **–** This dataset will compile information from three oil and gas databases: the proprietary IHS Enerdeq database, the BLM Automated Fluid Minerals Support System (AFMSS) database, and the proprietary Platts (a McGraw-Hill Financial Company) GIS Custom Data (hereafter, Platts) database of power plants. Point data from wells active within the last 10 years from IHS and

producing wells from AFMSS will be considered as a 5-acre (2.0ha) direct area of influence centered on the well point, as recommended by the BLM WO-300 (Minerals and Realty Management). Plugged and abandoned wells will be removed if the date of well abandonment was before the first day of the reporting year (i.e., for the 2015 reporting year, a well must have been plugged and abandoned by 12/31/2014 to be removed). Platts oil and gas power plants data (subset to operational power plants) will also be included as a 5-acre (2.0ha) direct area of influence.

Additional Measure: Reclaimed Energy-related Degradation. This dataset will include those wells that have been plugged and abandoned. This measure thereby attempts to measure energy-related degradation that has been reclaimed but not necessarily fully restored to sage-grouse habitat. This measure will establish a baseline by using wells that have been plugged and abandoned within the last 10 years from the IHS and AFMSS datasets. Time lags for lek attendance in response to infrastructure have been documented to be delayed 2–10 years from energy development activities (Harju et al. 2010). Reclamation actions may require 2 or more years from the Final Abandonment Notice. Sagebrush seedling establishment may take 6 or more years from the point of seeding, depending on such variables as annual precipitation, annual temperature, and soil type and depth (Pyke 2011). This 10-year period is conservative and assumes some level of habitat improvement 10 years after plugging. Research by Hemstrom et al. (2002), however, proposes an even longer period—more than 100 years—for recovery of sagebrush habitats, even with active restoration approaches. Direct area of influence will be considered 3 acres (1.2ha) (J. Perry, personal communication, February 12, 2014). This additional layer/measure could be used at the broad and mid-scale to identify areas where sagebrush habitat and/or potential sagebrush habitat is likely still degraded. This layer/measure could also be used where further investigation at the fine or site scale would be warranted to: 1) quantify the level of reclamation already conducted, and 2) evaluate the amount of restoration still required for sagebrush habitat recovery. At a particular level (e.g., population, PACs), these areas and the reclamation efforts/success could be used to inform reclamation standards associated with future developments. Once these areas have transitioned from reclamation standards to meeting restoration standards, they can be added back into the sagebrush availability layer using the same methodology as described for adding restoration treatment areas lost to wildfire and agriculture conversion (see Monitoring Sagebrush Restoration in Monitoring Sagebrush Availability). This dataset will be updated annually from the IHS dataset.

Energy (coal mines) – Currently, there is no comprehensive dataset available that identifies the footprint of active coal mining across all jurisdictions. Therefore, point and polygon datasets will be used each year to identify coal mining locations. Data sources will be identified and evaluated annually and will include at a minimum: BLM coal lease polygons, U.S. Energy Information Administration mine occurrence points, U.S. Office of Surface Mining Reclamation and Enforcement coal mining permit polygons (as available), and U.S. Geological Survey (USGS) Mineral Resources Data System mine occurrence points. These data will inform where active coal mining may be occurring. Additionally, coal power plant data from Platts power plants database (subset to operational power plants) will be included. Aerial imagery will then be used to digitize manually the active coal mining and coal power plants surface disturbance in or near these known occurrence areas. While the date of aerial imagery varies by scale, the most current data available from Esri and/or Google will be used to locate (generally at 1:50,000 and below) and digitize (generally at 1:10,000 and below) active coal mine and power plant direct area of influence. Coal mine location data source and imagery date will be documented for each digitized coal polygon at the time of creation. Subsurface facility locations (polygon or point location as available) will also be collected if available, included in density calculations, and added to the active surface activity layer as appropriate (if an actual direct area of influence can be located).

Energy (wind energy facilities) – This dataset will be a subset of the Federal Aviation Administration (FAA) Digital Obstacles point file. Points where "Type_" = "WINDMILL" will be included. Direct area of influence of these point features will be measured by converting to a polygon dataset as a direct area of influence of 3 acres (1.2ha) centered on each tower point. See the BLM's "Wind Energy Development Programmatic Environmental Impact Statement" (BLM 2005). Additionally, Platts power plants database will be used for transformer stations associated with wind energy sites (subset to operational power plants), also with a 3-acre (1.2ha) direct area of influence.

Energy (solar energy facilities) **–** This dataset will include solar plants as compiled with the Platts power plants database (subset to operational power plants). This database includes an attribute that indicates the operational capacity of each solar power plant. Total capacity at the power plant was based on ratings of the in-service unit(s), in megawatts. Direct area of influence polygons will be centered over each point feature representing 7.3ac (3.0ha) per megawatt of the stated operational capacity, per the report of the National Renewable Energy Laboratory (NREL), "Land-Use Requirements for Solar Power Plants in the United States" (Ong et al. 2013).

Energy (geothermal energy facilities) **–** This dataset will include geothermal wells in existence or under construction as compiled with the IHS wells database and power plants as compiled with the Platts database (subset to operational power plants). Direct area of influence of these point features will be measured by converting to a polygon dataset of 3 acres (1.2ha) centered on each well or power plant point.

Mining (active developments; locatable, leasable, salable) **–** This dataset will include active locatable mining locations as compiled with the proprietary InfoMine database. Aerial imagery will then be used to digitize manually the active mining surface disturbance in or near these known occurrence areas. While the date of aerial imagery varies by scale, the most current data available from Esri and/or Google will be used to locate (generally at 1:50,000 and below) and digitize (generally at 1:10,000 and below) active mine direct area of influence. Mine location data source and imagery date will be documented for each digitized polygon at the time of creation. Currently, there are no known compressive databases available for leasable or salable mining sites beyond coal mines. Other data sources will be evaluated and used as they are identified or as they become available. Point data may be converted to polygons to represent direct area of influence unless actual surface disturbance is available.

Infrastructure (roads) **–** This dataset will be compiled from the proprietary Esri StreetMap Premium for ArcGIS. Dataset features that will be used are: Interstate Highways, Major Roads, and Surface Streets to capture most paved and "crowned and ditched" roads while not including "two-track" and 4-wheel-drive routes. These minor roads, while not included in the broad- and mid-scale monitoring, may support a volume of traffic that can have deleterious effects on sage-grouse leks. It may be appropriate to consider the frequency and type of use of roads in a NEPA analysis for a proposed project. This fine- and site-scale analysis will require more site-specific data than is identified in this monitoring framework. The direct area of influence for roads will be represented by 240.2ft, 84.0ft, and 40.7ft (73.2m, 25.6m, and 12.4m) total widths centered on the line feature for Interstate Highways, Major Roads, and Surface Streets, respectively (Knick et al. 2011). The most current dataset will be used for each monitoring update. Note: This is a related but different dataset than what was used in BER (Manier et al. 2013). Individual BLM planning units may use different road layers for fine- and site-scale monitoring.

Infrastructure (railroads) **–** This dataset will be a compilation from the Federal Railroad Administration Rail Lines of the USA dataset. Non-abandoned rail lines will be used; abandoned rail lines will not be used. The direct are of influence for railroads will be represented by a 30.8ft (9.4m) total width (Knick et al. 2011) centered on the non-abandoned railroad line feature.

Infrastructure (power lines) **–** This line dataset will be derived from the proprietary Platts transmission lines database. Linear features in the dataset attributed as "buried" will be removed from the disturbance calculation. Only "In Service" lines will be used; "Proposed" lines will not be used. Direct area of influence will be determined by the kV designation: 1–199 kV (100ft/30.5m), 200–399 kV (150ft/45.7m), 400–699 kV (200ft/61.0m), and 700-or greater kV (250ft/76.2m) based on average right-of-way and structure widths, according to BLM WO-300 (Minerals and Realty Management).

Infrastructure (communication towers) **–** This point dataset will be compiled from the Federal Communications Commission (FCC) communication towers point file; all duplicate points will be removed. It will be converted to a polygon dataset by using a direct area of influence of 2.5 acres (1.0ha) centered on each communication tower point (Knick et al. 2011).

Infrastructure (other vertical structures) **–** This point dataset will be compiled from the FAA's Digital Obstacles point file. Points where "Type_" = "WINDMILL" will be removed. Duplicate points from the FCC communication towers point file will be removed. Remaining features will be converted to a polygon dataset using a direct area of influence of 2.5 acres (1.0ha) centered on each vertical structure point (Knick et al. 2011).

Other Developed Rights-of-Way **–** Currently, no additional data sources for other rights-of-way have been identified; roads, power lines, railroads, pipelines, and other known linear features are represented in the categories described above. The newly purchased IHS data do contain pipeline information; however, this database does not currently distinguish between above-ground and underground pipelines. If additional features representing human activities are identified, they will be added to monitoring reports using similar assumptions to those used with the threats described above.

b. Habitat Degradation Threat Combination and Calculation

The threats targeted for measuring human activity (**Table 3**) will be converted to direct area of influence polygons as described for each threat above. These threat polygon layers will be combined and features dissolved to create one overall polygon layer representing footprints of active human activity in the range of sage-grouse. Individual datasets, however, will be preserved to indicate which types of threats may be contributing to overall habitat degradation. This measure has been divided into three submeasures to describe habitat degradation on the landscape. Percentages will be calculated as follows:

Measure 2a. Footprint by geographic area of interest: Divide area of the active/direct footprint by the total area of the geographic area of interest (% disturbance in geographic area of interest).

Measure 2b. Active/direct footprint by historical sagebrush potential: Divide area of the active footprint that coincides with areas with historical sagebrush potential (BpS calculation from habitat availability) within a given geographic area of interest by the total area with sagebrush potential within the geographic area of interest (% disturbance on potential historical sagebrush in geographic area of interest).

Measure 2c. Active/direct footprint by current sagebrush: Divide area of the active footprint that coincides with areas of existing sagebrush (EVT calculation from habitat availability) within a given geographic area of interest by the total area that is current sagebrush within the geographic area of interest (% disturbance on current sagebrush in geographic area of interest).

Table 7. Geospatial Data Sources for Habitat Degradation (Measure 2)

Degradation Type	Subcategory	Data Source	Direct Area of Influence	Area Source
Energy (oil & gas)	Wells	IHS; BLM (AFMSS)	5.0ac (2.0ha)	BLM WO-300
	Power Plants	Platts (power plants)	5.0ac (2.0ha)	BLM WO-300
Energy (coal)	Mines	BLM; Forest Service; Office of Surface Mining Reclamation and Environment; USGS Mineral Resources Data System	Polygon area (digitized)	Esri/ Google Imagery
	Power Plants	Platts (power plants)	Polygon area (digitized)	Esri Imagery

Degradation Type	Subcategory	Data Source	Direct Area of Influence	Area Source
Energy (wind)	Wind Turbines	Federal Aviation Administration	3.0ac (1.2ha)	BLM WO-300
	Power Plants	Platts (power plants)	3.0ac (1.2ha)	BLM WO-300
Energy (solar)	Fields/Power Plants	Platts (power plants)	7.3ac (3.0 ha)/MW	NREL
Energy (geothermal)	Wells	IHS	3.0ac (1.2ha)	BLM WO-300
	Power Plants	Platts (power plants)	Polygon area (digitized)	Esri Imagery
Mining	Locatable Developments	InfoMine	Polygon area (digitized)	Esri Imagery
Infrastructure (roads)	Surface Streets (Minor Roads)	Esri StreetMap Premium	40.7 ft. (12.4m)	USGS
	Major Roads	Esri StreetMap Premium	84.0 ft. (25.6m)	USGS
	Interstate Highways	Esri StreetMap Premium	240.2 ft. (73.2m)	USGS
Infrastructure (railroads)	ActiveLines	Federal Railroad Administration	30.8 ft. (9.4m)	USGS
Infrastructure (powerlines)	1-199 kV Lines	Platts (transmission lines)	100 ft. (30.5 m)	BLM WO-300
	200-399 kV Lines	Platts (transmission lines)	150 ft. (45.7m)	BLM WO-300
	400-699 kV Lines	Platts (transmission lines)	200 ft. (61.0m)	BLM WO-300
	700+ kV Lines	Platts (transmission lines)	250 ft. (76.2m)	BLM WO-300
Infrastructure (communication	Towers	Federal Communications Commission	2.5 ac (1.0 ha)	BLM WO-300

B.3. Energy and Mining Density (Measure 3)

The measure of density of energy and mining will be calculated by combining the locations of energy and mining threats identified in **Table 3**. This measure will provide an estimate of the intensity of human activity or the intensity of habitat degradation. The number of energy facilities and mining locations will be summed and divided by the area of meaningful geographic areas of interest to calculate density of these activities. Data sources for each threat are found in **Table 7**. Specific assumptions (inclusion criteria for data, width/area assumptions for point and line features, etc.) and methodology for each threat, and the combined measure, are detailed below. All datasets will be updated annually to monitor broad- and mid-scale year-to-year changes and 5-year (or longer) trends in habitat degradation.

a. Energy and Mining Density Datasets and Assumptions

Energy (oil and gas wells and development facilities) (See Section B.2., Habitat Degradation Monitoring.)

Energy (coal mines) (See Section B.2., Habitat Degradation Monitoring.)

Energy (wind energy facilities) (See Section B.2., Habitat Degradation Monitoring.) ***Energy (solar energy facilities)*** (See Section B.2., Habitat Degradation Monitoring.) ***Energy (geothermal energy facilities)*** (See Section B.2., Habitat Degradation Monitoring.) ***Mining (active developments; locatable, leasable, salable)*** (See Section B.2., Habitat Degradation Monitoring.)

b. Energy and Mining Density Threat Combination and Calculation

Datasets for energy and mining will be collected in two primary forms: point locations (e.g., wells) and polygon areas (e.g., surface coal mining). The following rule set will be used to calculate density for meaningful geographic areas of interest including standard grids and per polygon:

1. Point locations will be preserved; no additional points will be removed beyond the methodology described above. Energy facilities in close proximity (an oil well close to a wind tower) will be retained.

2. Polygons will not be merged, or features further dissolved. Thus, overlapping facilities will be retained, such that each individual threat will be a separate polygon data input for the density calculation.

3. The analysis unit (polygon or 640-acre section in a grid) will be the basis for counting the number of mining or energy facilities per unit area. Within the analysis unit, all point features will be summed, and any individual polygons will be counted as one (e.g., a coal mine will be counted as one facility within population). Where polygon features overlap multiple units (polygons or pixels), the facility will be counted as one in each unit where the polygon occurs (e.g., a polygon crossing multiple 640-acre sections would be counted as one in each 640-acre section for a density per 640-acre-section calculation).

4. In methodologies with different-sized units (e.g., MZs, populations, etc.) raw facility counts will be converted to densities by dividing the raw facility counts by the total area of the unit. Typically this will be measured as facilities per 640 acres.

5. For uniform grids, raw facility counts will be reported. Typically this number will also be converted to facilities per 640 acres.

6. Reporting may include summaries beyond the simple ones above. Zonal statistics may be used to smooth smaller grids to help display and convey information about areas within meaningful geographic areas of interest that have high levels of energy and/or mining activity.

7. Additional statistics for each defined unit may also include adjusting the area to include only the area with the historical potential for sagebrush (BpS) or areas currently sagebrush (EVT).

Individual datasets and threat combination datasets for habitat degradation will be available through the BLM's EGIS web portal and geospatial gateway. Legacy datasets will be preserved so that trends may be calculated.

C. Population (Demographics) Monitoring

State wildlife management agencies are responsible for monitoring sage-grouse populations within their respective states. WAFWA will coordinate this collection of annual population data by state agencies. These data will be made available to the BLM according to the terms of the forthcoming Greater Sage-Grouse Population Monitoring Memorandum of Understanding (MOU) (2014) between WAFWA and the BLM. The MOU outlines a process, timeline, and responsibilities for regular data sharing of sage-grouse population and/or habitat information for the purposes of implementing sage-grouse ARMPA and subsequent effectiveness monitoring. Population areas were refined from the "Greater Sage-Grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report" (COT 2013) by individual state wildlife agencies to

create a consistent naming nomenclature for future data analyses. These population data will be used for analysis at the applicable scale to supplement habitat effectiveness monitoring of management actions and to inform the adaptive management responses.

D. Effectiveness Monitoring

Effectiveness monitoring will provide the data needed to evaluate BLM actions toward reaching the objective of the national planning strategy (BLM IM 2012-044) – to conserve sage-grouse populations and their habitat– and the objectives for the land use planning area. Effectiveness monitoring methods described here will encompass multiple larger scales, from areas as large as the WAFWA MZ to the scale of the ARMPA. Effectiveness data used for these larger-scale evaluations will include all lands in the area of interest, regardless of surface ownership/management, and will help inform where finer-scale evaluations are needed, such as population areas smaller than an RMP or PACs within an RMP (described in Fine and Site Scales). Data will also include the trend of disturbance within these areas of interest to inform the need to initiate adaptive management responses as described in the ARMPA.

The BLM will coordinate with the State of Wyoming in evaluating the compliance of all actions within a sage-grouse core area. Evaluation of current disturbance, disruptions and conservation actions within a SG core area will be conducted to determine if all entities are in compliance with their specific standards and whether or not it indeed has not caused declines of sage-grouse populations. This approach also helps focus scarce resources to areas experiencing habitat loss, degradation, or population declines, without excluding the possibility of concurrent, finer-scale evaluations as needed where habitat or population anomalies have been identified through some other means.

To determine the effectiveness of the sage-grouse national planning strategy, the BLM will evaluate the answers to the following questions and prepare a broad- and mid-scale effectiveness report:

1. Sagebrush Availability and Condition:

    a. What is the amount of sagebrush availability and the change in the amount and condition of sagebrush?

    b. What is the existing amount of sagebrush on the landscape and the change in the amount relative to the pre-EuroAmerican historical distribution of sagebrush (BpS)?

    c. What is the trend and condition of the indicators describing sagebrush characteristics important to sage-grouse?

2. Habitat Degradation and Intensity of Activities:

    a. What is the amount of habitat degradation and the change in that amount?

    b. What is the intensity of activities and the change in the intensity?

    c. What is the amount of reclaimed energy-related degradation and the change in the amount?

    d. What is the population estimation of sage-grouse and the change in the population estimation?

3. How is the BLM contributing to changes in the amount of sagebrush?

4. How is the BLM contributing to disturbance?

The compilation of broad- and mid-scale data (and population trends as available) into an effectiveness monitoring report will occur on a 5-year reporting schedule (see Attachment A), which may be accelerated to respond to critical emerging issues (in consultation with the USFWS and state wildlife agencies). In addition,

effectiveness monitoring results will be used to identify emerging issues and research needs and inform the BLM adaptive management strategy (Section 6 of this appendix).

To determine the effectiveness of the sage-grouse objectives of the land use plan, the BLM will evaluate the answers to the following questions and prepare a plan effectiveness report:

1. Is this plan meeting the sage-grouse habitat objectives?

2. Are sage-grouse areas within the ARMPA meeting, or making progress toward meeting, land health standards, including the Special Status Species/wildlife habitat standard?

3. Is the plan meeting the disturbance objective(s) within sage-grouse areas?

4. Are the sage-grouse populations within this plan boundary and within the sage-grouse areas increasing, stable, or declining?

The effectiveness monitoring report for this ARMPA will occur on a 5-year reporting schedule (see Attachment A) or more often if habitat or population anomalies indicate the need for an evaluation to facilitate adaptive management or respond to critical emerging issues. Data will be made available through the BLM's EGIS web portal and the geospatial gateway.

Methods

At the broad and mid scales (PACs and above) the BLM will summarize the vegetation, disturbance, and (when available) population data. Although the analysis will try to summarize results for PACs within each sage-grouse population, some populations may be too small to report the metrics appropriately and may need to be combined to provide an estimate with an acceptable level of accuracy. Otherwise, they will be flagged for more intensive monitoring by the appropriate landowner or agency. The BLM will then analyze monitoring data to detect the trend in the amount of sagebrush; the condition of the vegetation in the sage-grouse areas (MacKinnon et al. 2011); the trend in the amount of disturbance; the change in disturbed areas owing to successful restoration; and the amount of new disturbance the BLM has permitted. These data could be supplemented with population data (when available) to inform an understanding of the correlation between habitat and PACs within a population. This overall effectiveness evaluation must consider the lag effect response of populations to habitat changes (Garton et al. 2011).

Calculating Question 1, National Planning Strategy Effectiveness: The amount of sagebrush available in the large area of interest will use the information from Measure 1a (I.B.1., Sagebrush Availability) and calculate the change from the 2012 baseline to the end date of the reporting period. To calculate the change in the amount of sagebrush on the landscape to compare with the historical areas with potential to support sagebrush, the information from Measure 1b (I.B.1., Sagebrush Availability) will be used. To calculate the trend in the condition of sagebrush at the mid-scale, three sources of data will be used: the BLM's Grass/Shrub mapping effort (Future Plans in Section B.1., Sagebrush Availability); the results from the calculation of the landscape indicators, such as patch size (described below); and the BLM's Landscape Monitoring Framework (LMF) and sage-grouse intensification effort (also described below). The LMF and sage-grouse intensification effort data are collected in a statistical sampling framework that allows calculation of indicator values at multiple scales.

Beyond the importance of sagebrush availability to sage-grouse, the mix of sagebrush patches on the landscape at the broad and mid-scale provides the life requisite of space for sage-grouse dispersal needs (see the HAF). The configuration of sagebrush habitat patches and the land cover or land use between the habitat patches at the broad and mid scales also defines suitability. There are three significant habitat indicators that influence habitat use, dispersal, and movement across populations: the size and number of habitat patches, the connectivity of habitat patches (linkage areas), and habitat fragmentation (scope of unsuitable and non-habitats between habitat patches). The most appropriate commercial software to measure patch dynamics,

connectivity, and fragmentation at the broad and mid scales will be used, along with the same data layers derived for sagebrush availability.

The BLM initiated the LMF in 2011 in cooperation with the NRCS. The objective of the LMF effort is to provide unbiased estimates of vegetation and soil condition and trend using a statistically balanced sample design across BLM lands. Recognizing that sage-grouse populations are more resilient where the sagebrush plant community has certain characteristics unique to a particular life stage of sage-grouse (Knick and Connelly 2011, Stiver et al. in press), a group of sage-grouse habitat and sagebrush plant community subject matter experts identified those vegetation indicators collected at LMF sampling points that inform sage-grouse habitat needs. The experts represented the Agricultural Research Service, BLM, NRCS, USFWS, WAFWA, state wildlife agencies, and academia. The common indicators identified include: species composition, foliar cover, height of the tallest sagebrush and herbaceous plant, intercanopy gap, percent of invasive species, sagebrush shape, and bare ground. To increase the precision of estimates of sagebrush conditions within the range of sage-grouse, additional plot locations in occupied sage-grouse habitat (Sage-Grouse Intensification) were added in 2013. The common indicators are also collected on sampling locations in the NRCS National Resources Inventory Rangeland Resource Assessment (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/nri/?&cid=stelprdb1041620).

The sage-grouse intensification baseline data will be collected over a 5-year period, and an annual sage-grouse intensification report will be prepared describing the status of the indicators. Beginning in year 6, the annual status report will be accompanied with a trend report, which will be available on an annual basis thereafter, contingent on continuation of the current monitoring budget. This information, in combination with the Grass/Shrub mapping information, the mid-scale habitat suitability indicator measures, and the sagebrush availability information will be used to answer Question 1 of the National Planning Strategy Effectiveness Report.

Calculating Question 2, National Planning Strategy Effectiveness: Evaluations of the amount of habitat degradation and the intensity of the activities in the area of interest will use the information from Measure 2 (Section B.2., Habitat Degradation Monitoring) and Measure 3 (Section B.3., Energy and Mining Density). The field office will collect data on the amount of reclaimed energy-related degradation on plugged and abandoned and oil/gas well sites. The data are expected to demonstrate that the reclaimed sites have yet to meet the habitat restoration objectives for sage-grouse habitat. This information, in combination with the amount of habitat degradation, will be used to answer Question 2 of the National Planning Strategy Effectiveness Report.

Calculating Question 3, National Planning Strategy Effectiveness: The change in sage-grouse estimated populations will be calculated from data provided by the state wildlife agencies, when available. This population data (Section C., Population [Demographics] Monitoring) will be used to answer Question 3 of the National Planning Strategy Effectiveness Report.

Calculating Question 4, National Planning Strategy Effectiveness: The estimated contribution by the BLM to the change in the amount of sagebrush in the area of interest will use the information from Measure 1a (Section B.1., Sagebrush Availability). This measure is derived from the national datasets that remove sagebrush (**Table 4**). To determine the relative contribution of BLM management, the current Surface Management Agency geospatial data layer will be used to differentiate the amount of change for each management agency for this measure in the geographic areas of interest. This information will be used to answer Question 4 of the National Planning Strategy Effectiveness Report.

Calculating Question 5, National Planning Strategy Effectiveness: The estimated contribution by the BLM to the change in the amount of disturbance in the area of interest will use the information from Measure 2a (Section B.2., Monitoring Habitat Degradation) and Measure 3 (Section B.3., Energy and Mining Density). These measures are all derived from the national disturbance datasets that degrade habitat (**Table 7**). To determine the relative contribution of BLM management, the current Surface Management Agency geospatial data layer will be used to differentiate the amount of change for each management agency for these two

measures in the geographic areas of interest. This information will be used to answer Question 5 of the National Planning Strategy Effectiveness Report.

Answers to the five questions for determining the effectiveness of the national planning strategy will identify areas that appear to be meeting the objectives of the strategy and will facilitate identification of population areas for more detailed analysis. Conceptually, if the broad-scale monitoring identifies increasing sagebrush availability and improving vegetation conditions, decreasing disturbance, and a stable or increasing population for the area of interest, there is evidence that the objectives of the national planning strategy to maintain populations and their habitats have been met. Conversely, where information indicates that sagebrush is decreasing and vegetation conditions are degrading, disturbance in sage-grouse areas is increasing, and/or populations are declining relative to the baseline, there is evidence that the objectives of the national planning strategy are not being achieved. Such a determination would likely result in a more detailed analysis and could be the basis for implementing more restrictive adaptive management measures.

With respect to the land use plan area, the BLM will summarize the vegetation, disturbance, and population data to determine if the ARMPA is meeting the plan objectives. Effectiveness information used for these evaluations includes BLM surface management areas and will help inform where finer-scale evaluations are needed, such as seasonal habitats, corridors, or linkage areas. Data will also include the trend of disturbance within the sage-grouse areas, which will inform the need to initiate adaptive management responses as described in the ARMPA.

Calculating Question 1, Land Use Plan Effectiveness: The condition of vegetation and the allotments meeting land health standards (as articulated in "BLM Handbook 4180-1, Rangeland Health Standards") in sage-grouse areas will be used to determine the ARMPA's effectiveness in meeting the vegetation objectives for sage-grouse habitat set forth in the plan. The field office/ranger district will be responsible for collecting this data. In order for this data to be consistent and comparable, common indicators, consistent methods, and an unbiased sampling framework will be implemented following the principles in the BLM's AIM strategy (Taylor et al. 2014; Toevs et al. 2011; MacKinnon et al. 2011), in the BLM's Technical Reference "Interpreting Indicators of Rangeland Health" (Pellant et al. 2005), and in the HAF (Stiver et al. in press) or other approved WAFWA MZ–consistent guidance to measure and monitor sage-grouse habitats. This information will be used to answer Question 1 of the Land Use Plan Effectiveness Report.

Calculating Question 2, Land Use Plan Effectiveness: Sage-grouse areas within the ARMPA that are achieving land health stands (or, if trend data are available, that are making progress toward achieving them)—particularly the Special Status Species/wildlife habitat land health standard—will be used to determine the ARMPA's effectiveness in achieving the habitat objectives set forth in the plan. Field offices will follow directions in "BLM Handbook 4180-1, Rangeland Health Standards," to ascertain if sage-grouse areas are achieving or making progress toward achieving land health standards. One of the recommended criteria for evaluating this land health standard is the HAF indicators.

Calculating Question 3, Land Use Plan Effectiveness: The amount of habitat disturbance in sage-grouse areas identified in the ARMPA will be used to determine the ARMPA's effectiveness in meeting the plan's disturbance objectives. National datasets can be used to calculate the amount of disturbance, but field office data will likely increase the accuracy of this estimate. This information will be used to answer Question 3 of the Land Use Plan Effectiveness Report.

Calculating Question 4, Land Use Plan Effectiveness: The change in estimated sage-grouse populations will be calculated from data provided by the state wildlife agencies, when available, and will be used to determine ARMPA effectiveness. This population data (Section C., Population [Demographics] Monitoring) will be used to answer Question 4 of the Land Use Plan Effectiveness Report.

Results of the effectiveness monitoring process for the ARMPA will be used to inform the need for finer-scale investigations, initiate adaptive management actions as described in the ARMPA, initiate causation determination, and/or determine if changes to management decisions are warranted. The measures used at the

broad and mid scales will provide a suite of characteristics for evaluating the effectiveness of the adaptive management strategy.

Fine and Site Scales

Fine-scale (third-order) habitat selected by sage-grouse is described as the physical and geographic area within home ranges during breeding, summer, and winter periods. At this level, habitat suitability monitoring should address factors that affect sage-grouse use of, and movements between, seasonal use areas. The habitat monitoring at the fine and site scale (fourth order) should focus on indicators to describe seasonal home ranges for sage-grouse associated with a lek or lek group within a population or subpopulation area. Fine- and site-scale monitoring will inform the ARMPA effectiveness monitoring (see Section D., Effectiveness Monitoring) and the hard and soft triggers identified in the ARMPA's adaptive management section.

The BLM will coordinate with the State of Wyoming to share conservation, disturbance and vegetation analysis data to provide a core by core evaluation to make necessary adjustments in activity, priorities and other actions.

Site-scale habitat selected by sage-grouse is described as the more detailed vegetation characteristics of seasonal habitats. Habitat suitability characteristics include canopy cover and height of sagebrush and the associated understory vegetation. They also include vegetation associated with riparian areas, wet meadows, and other mesic habitats adjacent to sagebrush that may support sage-grouse habitat needs during different stages in their annual cycle.

As described in the Conclusion, details and application of monitoring at the fine and site scales will be described in the implementation-level monitoring plan for the ARMPA. The need for fine- and site-scale-specific habitat monitoring will vary by area, depending on proposed projects, existing conditions, habitat variability, threats, and land health. Examples of fine- and site-scale monitoring include: habitat vegetation monitoring to assess current habitat conditions; monitoring and evaluation of the success of projects targeting sage-grouse habitat enhancement and/or restoration; and habitat disturbance monitoring to provide localized disturbance measures to inform proposed project review and potential mitigation for project impacts. Monitoring plans should incorporate the principles outlined in the BLM's AIM strategy (Toevs et al. 2011) and in "AIM-Monitoring: A Component of the Assessment, Inventory, and Monitoring Strategy" (Taylor et al. 2014). Approved monitoring methods are: "BLM Core Terrestrial Indicators and Methods" (MacKinnon et al. 2011); The BLM's Technical Reference "Interpreting Indicators of Rangeland Health" (Pellant et al. 2005); and, "Sage-Grouse Habitat Assessment Framework: Multiscale Assessment Tool" (Stiver et al. in press).

Other state-specific disturbance tracking models include: the BLM's Wyoming DDCT (http://ddct.wygisc.org/) and the BLM's White River Data Management System in development with the USGS. Population monitoring data (in cooperation with state wildlife agencies) should be included during evaluation of the effectiveness of actions taken at the fine and site scales.

Fine- and site-scale sage-grouse habitat suitability indicators for seasonal habitats are identified in the HAF. The HAF has incorporated the Connelly et al. (2000) sage-grouse guidelines as well as many of the core indicators in the AIM strategy (Toevs et al. 2011). There may be a need to develop adjustments to height and cover or other site suitability values described in the HAF; any such adjustments should be ecologically defensible. To foster consistency, however, adjustments to site suitability values at the local scale should be avoided unless there is strong, scientific justification for making those adjustments. That justification should be provided. WAFWA MZ adjustments must be supported by regional plant productivity and habitat data for the floristic province. If adjustments are made to the site-scale indicators, they must be made using data from the appropriate seasonal habitat designation (breeding/nesting, brood-rearing, winter) collected from sage-grouse studies found in the relevant area and peer-reviewed by the appropriate wildlife management agency(ies) and researchers.

When conducting land heath assessments, the BLM should follow, at a minimum, "Interpreting Indicators of Rangeland Health" (Pellant et. al. 2005) and the "BLM Core Terrestrial Indicators and Methods" (MacKinnon et al. 2011). For assessments being conducted in sage-grouse designated management areas, the BLM should collect additional data to inform the HAF indicators that have not been collected using the above methods. Implementation of the principles outlined in the AIM strategy will allow the data to be used to generate unbiased estimates of condition across the area of interest; facilitate consistent data collection and rollup analysis among management units; help provide consistent data to inform the classification and interpretation of imagery; and provide condition and trend of the indicators describing sagebrush characteristics important to sage-grouse habitat (see Section D., Effectiveness Monitoring).

Conclusion

This Greater Sage-Grouse Monitoring Framework was developed for all of the RMPs involved in the sage-grouse planning effort. As such, it describes the monitoring activities at the broad and mid scales and provides a guide for the BLM to collaborate with partners/other agencies to develop the ARMPA's specific monitoring plan.

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Attachment A: An Overview of Monitoring Commitments

	Broad and Mid scales					Fine and Site Scales
	Implement-ation	**Sagebrush Availability**	**Habitat Degradation**	**Population**	**Effectiveness**	
How will the data be used?	Tracking and documenting implementation of land use plan decisions and inform adaptive management	Tracking changes in land cover (sagebrush) and inform adaptive management	Tracking changes in disturbance (threats) to sage-grouse habitat and inform adaptive management	Tracking trends in sage-grouse populations (and/or leks; as determined by state wildlife agencies) and inform adaptive management	Characterizing the relationship among disturbance, implementation actions, and sagebrush metrics and inform adaptive management	Measuring seasonal habitat, connectivity at the fine scale, and habitat conditions at the site scale, calculating disturbance and inform adaptive management
Who is collecting the data?	BLM FO	NOC and NIFC	National data sets (NOC), BLM FOs	State wildlife agencies through WAFWA	Comes from other broad and mid-scale monitoring types, analyzed by the NOC	BLM FO and SO, (with partners) including disturbance
How often are the data collected, reported and made available to USFWS?	Collected and reported annually; summary every 5 years	Updated and changes reported annually; summary reports every 5 years	Collected and changes reported annually; summary reports every 5 years	State data reported annually per WAFWA MOU; summary reports every 5 years	Collected and reported every 5 years (coincident with ARMPA evaluations)	Collection and trend analysis ongoing, reported every 5 years or as needed to inform adaptive management
What is the spatial scale?	Summarized by ARMPA with flexibility for reporting by other units	Summarized by PACs (size dependent) with flexibility for reporting by other units	Summarized by PACs (size dependent) with flexibility for reporting by other units	Summarized by PACs (size dependent) with flexibility for reporting by other units	Summarized by MZ, and ARMPA with flexibility for reporting by other units (e.g., PAC)	Variable (e.g., projects and seasonal habitats)
What are the potential personnel and budget impacts?	Additional capacity or re-prioritization of ongoing monitoring work and budget realignment	At a minimum, current skills and capacity must be maintained; data mgmt. cost are TBD	At a minimum, current skills and capacity must be maintained; data mgmt. and data layer purchase cost are TBD	No additional personnel or budget impacts for BLM	Additional capacity or re-prioritization of ongoing monitoring work and budget realignment	Additional capacity or re-prioritization of ongoing monitoring work and budget realignment
Who has primary and secondary responsibilities for reporting?	BLM FO & SO BLM Planning	NOC WO	NOC BLM SO & appropriate programs	WAFWA & state wildlife agencies BLM SO, NOC	Broad and mid-scale at the NOC, RMP at BLM SO	BLM FO, BLM SO

	Broad and Mid scales					Fine and Site Scales
	Implement-ation	**Sagebrush Availability**	**Habitat Degradation**	**Population**	**Effectiveness**	
What new processes/ tools are needed?	National implementation data sets and analysis tools	Updates to national land cover data	Data standards and roll-up methods for these data	Standards in population monitoring (WAFWA)	Reporting methodologies	Data standards data storage; and reporting

Attachment B - List of All Sagebrush Species and Subspecies Included in the Selection Criteria for Building the EVT and BPS Layers

Artemisia arbuscula subspecies longicaulis
Artemisia arbuscula subspecies longiloba
Artemisia bigelovii
Artemisia nova
Artemisia papposa
Artemisia pygmaea
Artemisia rigida
Artemisia spinescens
Artemisia tripartita subspecies rupicola
Artemisia tripartita subspecies tripartita
Tanacetum nuttallii
Artemisia cana subspecies bolanderi
Artemisia cana subspecies cana
Artemisia cana subspecies viscidula
Artemisia tridentata subspecies wyomingensis
Artemisia tridentata subspecies tridentata
Artemisia tridentata subspecies vaseyana
Artemisia tridentata subspecies spiciformis
Artemisia tridentata subspecies xericensis
Artemisia tridentata variety pauciflora
Artemisia frigida
Artemisia pedatifida

Attachment C – User and Producer Accuracies for Aggregated Ecological Systems within LANDFIRE Map Zones

LANDFIRE Map Zone Name	User Accuracy	Producer Accuracy	% of Map Zone within Historic Schroeder
Wyoming Basin	76.9%	90.9%	98.5%
Snake River Plain	68.8%	85.2%	98.4%
Missouri River Plateau	57.7%	100.0%	91.3%
Grand Coulee Basin of the Columbia Plateau	80.0%	80.0%	89.3%
Wyoming Highlands	75.3%	85.9%	88.1%
Western Great Basin	69.3%	75.4%	72.9%
Blue Mountain Region of the Columbia Plateau	85.7%	88.7%	72.7%
Eastern Great Basin	62.7%	80.0%	62.8%
Northwestern Great Plains	76.5%	92.9%	46.3%
Northern Rocky Mountains	72.5%	89.2%	42.5%
Utah High Plateaus	81.8%	78.3%	41.5%
Colorado Plateau	65.3%	76.2%	28.8%
Middle Rocky Mountains	78.6%	73.3%	26.4%
Cascade Mountain Range	57.1%	88.9%	17.3%
Sierra Nevada Mountain Range	0.0%	0.0%	12.3%
Northwestern Rocky Mountains	66.7%	60.0%	7.3%
Southern Rocky Mountains	58.6%	56.7%	7.0%
Northern Cascades	75.0%	75.0%	2.6%
Mogollon Rim	66.7%	100.0%	1.7%
Death Valley Basin	0.0%	0.0%	1.2%

There are two anomalous map zones with 0% user and producer accuracies, attributable to no available reference data for the ecological systems of interest.

User accuracy is a map-based accuracy that is computed by looking at the reference data for a class and determining the percentage of correct predictions for these samples. For example, if I select any sagebrush pixel on the classified map, what is the probability that I'll be standing in a sagebrush stand when I visit that pixel location in the field? Commission Error equates to including a pixel in a class when it should have been excluded (i.e., commission error = 1 – user's accuracy).

Producer accuracy is a reference-based accuracy that is computed by looking at the predictions produced for a class and determining the percentage of correct predictions. In other words, if I know that a particular area is sagebrush (I've been out on the ground to check), what is the probability that the digital map will

correctly identify that pixel as sagebrush? Omission Error equates to excluding a pixel that should have been included in the class (i.e., omission error = 1 – producer's accuracy).

COT Objective 6: Prioritize, fund and implement research to address existing uncertainties

> *"Increased funding and support for key research projects that will address uncertainties associated with sage-grouse and sagebrush habitat management is essential. Effective amelioration of threats can only be accomplished if the mechanisms by which those threats are imposed on the redundancy, representation, and resilience of the species and its habitats are understood." (COT report 2013)*

In accordance with BLM policy, the Record of Decision and Approved Plan will establish intervals and standards for evaluations as part of the implementation strategy. Priorities will be established based on the identified threats in the planning area, the conservation objectives included as part of the Approved Plan, and any potential uncertainties associated with sage-grouse and associated habitat management. A part of this strategy will include development of a budget to accomplish each of the identified tasks and fund potential research topics to address any uncertainties.

As new science pertaining to sage-grouse and habitat is continuously evolving, refined management strategies may be necessary to ensure that BLM is utilizing the most current science, information, and data regarding sage-grouse. It is for this reason that BLM has collaborated with the State of Wyoming and USFWS to develop an adaptive management strategy as a part of the planning process.

Wyoming Greater Sage-Grouse Adaptive Management Plan

The Greater Sage-Grouse adaptive management plan provides a means of addressing and responding to unintended negative impacts to Greater Sage-Grouse and its habitat will be addressed before consequences become severe or irreversible. This adaptive management plan:

- Utilizes science based soft and hard adaptive management triggers,
- Addresses multiple scales of data, and
- Utilizes an adaptive management working group.

Adaptive Management Triggers

Adaptive management triggers are essential for identifying when potential management changes are needed in order to continue meeting greater Sage-Grouse Conservation objectives. With respect to sage-grouse, all regulatory entities in Wyoming, including the BLM, use soft and hard triggers. Soft and hard triggers are focused on three metrics: 1) number of active leks, 2) acres of available habitat, and 3) population trends based on annual lek counts. The hard and soft trigger data will be analyzed as soon as it becomes available after the signing of the ROD and then at a minimum, analyzed annually thereafter.

Soft Triggers:

Soft triggers are indicators that management or specific activities may not be achieving the intended results of conservation action or that unanticipated changes to populations or habitats have occurred that have the potential to place habitats or populations at risk. The soft trigger is any deviation from normal trends in habitat or population in any given year. Metrics include, but are not limited to, annual lek counts, wing counts, aerial surveys, habitat monitoring, and DDCT evaluations. BLM field offices, with the assistance of their respective land and resource management plan implementation groups, local WGFD offices, and local sage-grouse working groups will evaluate the metrics with the Adaptive Management Working Group (AMWG) on an annual basis. For population metrics, normal population trends are calculated as the five-year running mean of annual population counts. The purpose of these strategies is to address localized greater sage-grouse population and habitat changes by providing the framework in which management will

change if monitoring identifies negative population and habitat anomalies in order to avoid crossing a hard trigger threshold.

Hard Triggers:

Hard triggers are indicators that management is not achieving desired conservation results. Hard triggers would be considered a catastrophic indicator that the species is not responding to conservation actions, or that a larger-scale impact or set of impacts is having a negative effect.

Within the range of normal population variables (five-year running mean of annual population counts), hard triggers shall be determined to take effect when two of the three metrics exceeds 60% of normal variability for the area under management in a single year, or when any of the three metrics exceeds 40% of normal variability for a three year time period within a five-year range of analysis. A minimum of three consecutive years in a five-year period is used to determine trends (i.e., Y1-2-3, Y2-3-4, Y3-4-5).

Adaptive Management Response

Soft Triggers Response:

Soft triggers require immediate monitoring and surveillance to determine causal factors and may require curtailment of activities in the short- or long-term, as allowed by law. The project level adaptive management strategies will identify appropriate responses where the project's activities are identified as the causal factor. The management agency (BLM) and the AMWG will implement an appropriate response strategy to address causal factors not attributable to a specific project or to make adjustments at a larger regional or state-wide level.

Hard Trigger Response:

Upon determination that a hard trigger has been tripped, the BLM will immediately defer issuance of discretionary authorizations for new actions within the Biologically Significant Unit for a period of 90 days. In addition, within 14 days of a determination that a hard trigger has been tripped, the AMWG will convene to develop an interim response strategy and initiate an assessment to determine the causal factor or factors (hereafter called the causal factor assessment).

An interim response strategy will be developed, and implemented to the extent permitted by law, within 90 days of determination that a hard trigger has been tripped. The technical team will be consulted to identify the scope and scale of the interim strategy. Based on the recommendation of the AMWG, the BLM will implement an interim response strategy through an Instruction Memorandum or other management mechanisms to direct management until the causal factor(s) and appropriate response(s) can be determined. The interim response strategy will consist of appropriate management measures undertaken at the project stage, supported by the best available science, to address the specific metric which has been tripped and may include deferral of some activities as appropriate. Measures that were analyzed in this EIS and the COT, NTT reports, and NPT guidance will be reviewed in addition to current science to identify the most appropriate measures to be implemented as part of the interim response strategy. The BLM will comply with all applicable law in implementing such response(s), and, if applicable, will undertake a plan amendment or revision under BLM's planning regulations and policies.

Baseline sage-grouse population levels are established by pre-disturbance surveys, reference surveys and accounting for regional and statewide trends in population levels. Population counts in Wyoming are maintained by the WGFD. Estimates of population are determined based upon survey protocols determined by the WGFD, and are implemented consistently throughout the state. Population counts are tracked for individual leks and then calculated for each core area (PHMA).

Interim Strategy

An interim response strategy will be developed, and implemented to the extent permitted by law, within 90 days of determination that a hard trigger has been tripped. The technical team (see Implementation Groups below) will be consulted to identify the scope and scale of the interim strategy. Based on the recommendation of the AMWG, the BLM will implement an interim response strategy through an Instruction Memorandum or other management mechanisms to direct management until the causal factor(s) and appropriate response(s) can be determined. The interim response strategy will consist of appropriate management measures undertaken at the project stage, supported by the best available science, to address the specific metric which has been tripped and may include deferral of some activities as appropriate. Measures that were analyzed in this EIS and the COT, NTT reports, and NPT guidance will be reviewed in addition to current science to identify the most appropriate measures to be implemented as part of the interim response strategy. The BLM will comply with all applicable law in implementing such response(s), and, if applicable, will undertake a plan amendment or revision under BLM's planning regulations and policies.

The interim strategy will be implemented for the biologically significant unit (BSU), which, in Wyoming, is the core area, regardless of whether the core area crosses multiple planning boundaries. If it has been identified that more than one core area has the same hard triggers being tripped, or is trending towards triggers being tripped, the interim strategy will be implemented at the appropriate scale.

Causal Factor Assessment

The causal factor assessment will be completed within 180 days of determination that a hard trigger threshold has been crossed. Once the causal factor assessment is completed by the AMWG, the interim response strategy will be modified to adequately address the causal factors in consultation with the technical team. If a causal factor or factors cannot be identified, the interim response strategy shall stay in place until the cause can be determined and any new planning decision can be implemented.

EIS Level Projects

Each major project (EIS level) will include adaptive management strategies in support of the population management objectives for Greater Sage-Grouse set by the State of Wyoming, and will be consistent with the Wyoming Greater Sage-Grouse Adaptive Management Plan. These adaptive management strategies will be developed in partnership with the AMWG, WGFD, project proponents, partners, and stakeholders, incorporating the best available science.

Implementation Groups

Sage-Grouse Implementation Team

The State of Wyoming's strategy is implemented by the Sage-Grouse Implementation Team (SGIT), established by Executive Order in 2008 and codified in 2014 by the Wyoming Legislature (W.S. § 9-19-101). The SGIT is a Governor appointed body with representation by federal agencies (BLM, Forest Service, USFWS, and NRCS), state agencies (WGFD, Department of Agriculture, Department of Environmental Quality, Wildlife and Natural Resource Trust Fund, Oil and Gas Conservation Commission, and Office of State Lands and Investments), the Wyoming Legislature, county governments, energy developers, mining companies, landowners, and non- governmental organizations. The BLM, USFWS, NRCS and the Forest Service all have an equal role in the SGIT.

Land and Resource Management Plan – Implementation Teams

Land and Resource Management Plans are implemented through implementation teams. These implementation teams include cooperating agencies who participated in the development of this land use

plan representing local, state, and federal agencies. These implementation teams will coordinate with the AMWG and others to evaluate metrics and management responses necessary to meet Greater Sage-Grouse conservation objectives within their planning area.

Adaptive Management Working Group and Technical Team

An Adaptive Management Working Group (AMWG) will be established in consultation with the SGIT to provide appropriate guidance for agencies with the ability to affect sage-grouse populations and/or habitat through their permitting authority. The AMWG will include BLM, Forest Service, USFWS, and State of Wyoming. The purpose of this group will be to initiate a response strategy should it be determined that a hard trigger has been tripped or if soft triggers are showing a trend across a region. A hard trigger may be tripped at any time, thus, upon identification of such event, current available population and habitat data will be reviewed by the AMWG with the assistance of a technical team comprised of agency biologists, scientists familiar with the Management Zone in question, and other individuals as appropriate (e.g., habitat managers, respective landowners, other appropriate representatives) to confirm that a hard trigger has been tripped. Upon verification of data showing that a hard trigger has been tripped, the AMWG will convene within 14 days.

The AMWG will review monitoring data which has been collected by the appropriate local sage-grouse working groups in conformance with data collection standards. This group will meet annually to review all data collected in the prior year regarding Greater Sage-Grouse populations and habitats. Monitoring data will have been analyzed (by WGFD for population based metrics (leks, wing counts, etc. and by land managers [BLM, Forest Service, State of Wyoming] for habitat based metrics [DDCT, etc.]) Should the monitoring data suggest a trend toward a soft or hard trigger being tripped, they will 1. Identify what metric is indicating that trend (population or habitat); and 2. Identify a technical team to review the data and compile a range of activities which may be causing the trend. Should review of the monitoring data identify that multiple soft triggers have been tripped in one core area, or the same triggers have been tripped across multiple core areas, the technical team will be tasked with verifying the scope and intensity of the trends.

Once the analysis of the trends has been completed by the technical team and reported back to the AMWG, the AMWG will make recommendations to the appropriate land managing agency regarding an interim adaptive management strategy to be implemented. Implementation will occur via the appropriate regulations and policy applicable for that agency. At that time, the State of Wyoming will conduct a review of the regulatory authority implementing the Sage-Grouse Core Area Strategy to determine if a State of Wyoming adaptive management strategy is warranted.

Upon review of the annual data by the AMWG and technical team, the State of Wyoming, as part of the AMWG, will contact neighboring states within the respective Management Zone to inform them of any findings. Should a hard trigger be tripped, the trigger which has been tripped and any recommended adaptive management strategy being implemented will be shared with the appropriate neighboring state(s). Should the need arise for implementation of a multi-state adaptive management strategy; the AMWG will coordinate to develop an effective response.

Small Leks

Small leks will be given special consideration. Due to geographic variations a definition of “small” is not provided, rather determination of “small” will be made by the AMWG based upon recommendations of the scientific community. Generally, “small” is considered 10 or fewer males for a three year time period within a five-year range of analysis. If a trigger is hit based upon such a lek, then the adaptive management working group will evaluate the site-specific circumstances and determine appropriate remedial action.

Glossary Terms

Additionality: The conservation benefits of compensatory mitigation are demonstrably new and would not have resulted without the compensatory mitigation project. (BLM Manual Section 1794).

Avoidance mitigation: Avoiding the impact altogether by not taking a certain action or parts of an action. (40 CFR 1508.20(a)) (e.g., may also include avoiding the impact by moving the proposed action to a different time or location.)

Compensatory mitigation: Compensating for the (residual) impact by replacing or providing substitute resources or environments. (40 CFR 1508.20)

Compensatory mitigation projects: Specific, on-the-ground actions to improve and/or protect habitats (e.g. chemical vegetation treatments, land acquisitions, conservation easements).

Compensatory mitigation sites: The durable areas where compensatory mitigation projects will occur.

Durability (protective and ecological): The administrative, legal, and financial assurances that secure and protect the conservation status of a compensatory mitigation site, and the ecological benefits of a compensatory mitigation project, for at least as long as the associated impacts persist. (BLM Manual Section 1794).

Minimization mitigation: Minimizing impacts by limiting the degree or magnitude of the action and its implementation. (40 CFR 1508.20 (b))

Residual impacts: Impacts from an authorized land use that remain after applying avoidance and minimization mitigation; also referred to as unavoidable impacts.

Timeliness: The conservation benefits from compensatory mitigation accruing as early as possible or before impacts have begun. (BLM Manual Section 1794).

Appendix E – Federal Laws, Regulations, Policies, and Guidance

The following list of federal laws, regulations, policy, and guidance is not intended to be exhaustive, and just because a specific law, regulation, policy, or guidance is not listed does not mean it's not applicable.

Environmental Policy

National Environmental Policy Act of 1969

NEPA (42 United States Code [USC] 4321 et seq.) requires the preparation of EISs for federal projects that may have a significant effect on the environment. It requires systematic, interdisciplinary planning to ensure the integrated use of the natural and social sciences, and the environmental design arts in making decisions about major federal actions that may have a significant effect on the environment. The procedures required under NEPA are implemented through the CEQ regulations in 40 CFR §1500.

Federal Compliance with Pollution Control Standards (EO 12088)

Federal Compliance with Pollution Control Standards (EO 12088) states that federal agencies must comply with applicable pollution control standards.

Protection and Enhancement of Environmental Quality (EO 11514)

Protection and Enhancement of Environmental Quality (EO 11514, as amended by EO 11991) establishes the policy for federal agencies to provide leadership in environmental protection and enhancement.

Land Use and Natural Resources Management

Federal Land Policy and Management Act of 1976

The FLPMA, as amended (43 USC 1701, et seq.), provides for public lands to be generally retained in federal ownership for periodic and systematic inventory of the public lands and their resources; for a review of existing withdrawals and classifications; for establishment of comprehensive rules and regulations for administering public lands statutes; for multiple-use management on a sustained yield basis; for protection of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource and archeological values; for receiving fair market value for the use of the public lands and their resources; for establishment of uniform procedures for any disposal, acquisition or exchange; for identification and protection of areas of critical environmental concern; for recognition of the nation's need for domestic sources of minerals, food, timber and fiber from the public lands, including implementation of the Mining and Mineral Policy Act of 1970; and for payments to compensate states and local governments for burdens created as a result of the immunity of federal lands from state and local taxation. The general land management regulations are provided in 43 CFR §2000, Subchapter B.

Bankhead-Jones Farm Tenant Act of 1937

Title III of this Act directs and authorizes the Secretary of Agriculture to develop programs of land conservation and use to protect, improve, develop, administer the land acquired, and construct structures thereon needed to adapt the land to beneficial use. Under the Act, the Department of Agriculture may issue leases, licenses, permits, term permits or easements for most uses, except ROWs.

Taylor Grazing Act of 1934

The Taylor Grazing Act of 1934, as amended (43 USC 315), provides authorization to the Secretary of the Interior to establish grazing districts from any part of the public domain of the United States (exclusive of Alaska) which, in the Secretary's opinion, are chiefly valuable for grazing and raising forage crops; to

regulate and administer grazing use of the public lands; and to improve the public rangelands. Regulations for grazing permits are provided in 43 CFR §4100.

Public Rangelands Improvement Act of 1978

The Public Rangelands Improvement Act of 1978 (43 USC 1901, et seq.) provides for the improvement of range conditions on public rangelands, research on wild horse and burro population dynamics, and other range management practices.

Federal Noxious Weed Act of 1974

The Federal Noxious Weed Act of 1974, as amended (7 USC 2814), provides for the designation of a lead office and a person trained in the management of undesirable plants, establishment and funding of a management program for undesirable plants, completion and implementation of cooperative agreements with state agencies, and establishment of integrated management systems to control undesirable plant species.

Healthy Forests Restoration Act of 2003

The Healthy Forests Restoration Act serves to further the Healthy Forests Initiative to reduce the threat of destructive wildfires while upholding environmental standards and encouraging early public input during review and planning processes. The Act strengthens public participation in developing high-priority forest health projects; reduces the complexity of environmental analysis, allowing federal land agencies to use the best science available to actively manage land under their protection; provides a more effective appeals process, encouraging early public participation in project planning; and issues clear guidance for court action against forest health projects.

Grazing Fees of 1986 (EO 12548)

EO 12548 provides for establishment of appropriate fees for the grazing of domestic livestock on public rangelands and directs that the fee shall not be less than $1.35 per animal unit month.

Wilderness Act of 1964

The Wilderness Act of 1964 (16 USC 1131, et seq.) provides for the designation and preservation of wilderness areas.

Wild and Scenic Rivers Act of 1968, as amended (16 U.S.C. 1271-1287)

This Act establishes the National Wild and Scenic Rivers System, designates the rivers included in the system, establishes policy for managing designated rivers, and prescribes a process for designating additions to the system.

Federal Land Exchange Facilitation Act of 1988

The Federal Land Exchange Facilitation Act amended FLPMA with respect to BLM land exchanges. It was designed to streamline land exchange procedures.

Recreation and Public Purposes Act of 1926

In 1954, the Congress enacted the Recreation and Public Purposes Act (43 USC 869 et. seq.) as a complete revision of the Recreation Act of 1926 in response to the public need for a nationwide system of parks and other recreational and public purposes areas. This law is administered by the BLM. The Act authorizes the sale or lease of public lands for recreational or public purposes to state and local governments and to qualified nonprofit organizations. Examples of typical uses under the Act are historic monument sites,

campgrounds, schools, fire houses, law enforcement facilities, municipal facilities, landfills, hospitals, parks and fairgrounds.

National Trails System Act of 1968, as amended (16 U.S.C. 1241-1251)

In order to provide for the ever-increasing outdoor recreation needs of an expanding population and in order to promote the preservation of public access to travel within, and for the enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation, trails should be established (i) primarily, near the urban areas of the Nation, and (ii) secondarily, within scenic areas and along historic travel routes of the Nation, often more remotely located.

The purpose of this Act is to provide the means for attaining these objectives by instituting a national system of recreation, scenic and historic trails, by designating the Appalachian Trail and the Pacific Crest Trail as the initial components of that system, and by prescribing the methods by which, and standards according to which, additional components may be added to the system.

Airport and Airway Improvement Act of 1982

The Airport and Airway Improvement Act established the Airport Improvement Program which provides grants to public agencies and, in some cases, to private owners and entities for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems.

Air Quality

The Clean Air Act of 1990

The Clean Air Act of 1990, as amended (42 USC 7401, 7642), requires the BLM to protect air quality, maintain federal and state designated air quality standards, and abide by the requirements of the state implementation plans.

Wyoming Air Quality Standards and Regulations

Wyoming air quality standards and regulations, Chapters 1 to 11, specify the requirements for air permitting and monitoring to implement Clean Air Act and state ambient air quality standards.

Water Quality

The Clean Water Act of 1987

The Clean Water Act of 1987, as amended (33 USC 1251), establishes objectives to restore and maintain the chemical, physical and biological integrity of the Nation's water. The Act also requires permits for point source discharges to navigable waters of the United States and the protection of wetlands and includes monitoring and research provisions for protection of ambient water quality.

The Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs and groundwater wells. SDWA authorizes the U.S. Environmental Protection Agency (EPA) to set national health-based standards for drinking water to protect against both naturally occurring and manmade contaminants that may be found in drinking water. The U.S. EPA, states and water systems work together to ensure that these standards are met.

Wyoming Water Quality Standards and Regulations

Wyoming water quality standards and regulations implement permitting and monitoring requirements for the National Pollutant Discharge Elimination System, operation of injection wells, ground water protection requirements, prevention and response requirements for spills, and salinity standards and criteria for the Colorado River Basin.

Colorado River Salinity Control Act

The 1974 Colorado River Basin Salinity Control Act, Public Law 93-320, authorizes the construction, operation and maintenance of works in the Colorado River Basin to control the salinity of water delivered to Mexico.

Protection of Wetlands (EO 11990)

Protection of Wetlands (EO 11990) requires federal agencies to take action to minimize the destruction, loss or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands.

Floodplain Management (EO 11988)

Floodplain Management (EO 11988) provides for the restoration and preservation of national and beneficial floodplain values, and enhancement of the natural and beneficial values of wetlands in carrying out programs affecting land use.

Minerals

General Mining Law of 1872

The General Mining Law of 1872, as amended (30 USC 22, et seq.), provides for locating and patenting mining claims where a discovery has been made for locatable minerals on public lands in specified states. Regulations for staking and maintenance of claims on BLM-administered lands are listed in 43 CFR §3800. Regulations for staking and maintenance of claims on NFS lands are listed in 36 CFR Part 228.

Mineral Leasing Act of 1920

The Mineral Leasing Act of 1920, as amended (30 USC 181, et seq.), provides for the leasing of deposits of coal, phosphate, sodium, potassium, oil, oil shale, native asphalt, solid and semisolid bitumen, bituminous rock or gas, and lands containing such deposits owned by the United States, including those in national forests but excluding those acquired under other acts subsequent to February 25, 1920, and those lands within the national petroleum and oil shale reserves. Regulations for onshore oil and gas leasing are provided in 43 CFR §3100. Regulations concerning oil and gas leases on NFS lands are listed in 36 CFR Part 228.

Materials Act of 1947

The Materials Act of 1947, as amended (30 USC 601–604, et seq.), provides for the sale of common variety materials for personal, commercial or industrial uses and for free use for local, state, and federal governmental entities. The sales of mineral materials are controlled by the regulations listed in 43 CFR §3600 and 36 CFR Part 228.

Common Varieties of Mineral Materials Act of 1947

The Common Varieties of Mineral Materials Act of 1947 provides for the disposal of mineral materials on the public lands through bidding, negotiated contracts or free use.

Mineral Leasing Act for Acquired Lands of 1947

The Mineral Leasing Act for Acquired Lands of 1947 states that all deposits of coal, phosphate, oil, oil shale, gas, sodium, potassium and sulfur that are owned, may be acquired, and are within lands acquired by the United States, may be leased by the Secretary of the Interior under the same conditions as contained in the leasing provisions of the mineral leasing laws. No mineral deposits shall be leased without the consent of the head of the executive department having jurisdiction over the lands containing the deposit and subject to such conditions as that official may prescribe.

Multiple Use Mining Act of 1955

The Multiple Use Mining Act of 1955 allows the sale of mineral materials, such as sand and gravel, and provides direction for use of surface resources of mining claims.

Mining and Minerals Policy Act of 1970

The Mining and Minerals Policy Act of 1970 states that the continuing policy of the federal government is to foster and encourage private enterprise in the development of economically sound and stable domestic mining and minerals industries and the orderly and economic development of domestic mineral resources.

Federal Coal Leasing Amendments Act of 1976

The Federal Coal Leasing Amendments Act of 1976 (30 USC 201, et seq.) requires competitive leasing of coal on public lands and mandates a broad spectrum of coal operations requirements for lease management. Coal leasing regulations for BLM-administered and NFS lands are provided in 43 CFR §3400.

Federal Onshore Oil and Gas Leasing Reform Act of 1987

The Federal Onshore Oil and Gas Leasing Reform Act of 1987 authorized the Secretary of Agriculture the opportunity to object to leasing NFS lands reserved from the public domain and to regulate surface disturbing activities conducted pursuant to any lease issued under this Act. The BLM may issue oil and gas leases on NFS lands reserved for the public domain unless the Forest Service objects to the leasing.

Energy Policy and Conservation Act of 2000

The purposes of the Energy Policy and Conservation Act of 2000, as amended (42 USC 6217 et seq.), are to:

- Grant specific authority to the President to fulfill obligations of the United States under the international energy program,
- Provide for the creation of a Strategic Petroleum Reserve capable of reducing the impact of severe energy supply interruptions,
- Conserve energy supplies through energy conservation programs, and, where necessary, the regulation of certain energy uses,
- Provide for improved energy efficiency of motor vehicles, major appliances and certain other consumer products,
- Provide a means for verification of energy data to ensure the reliability of energy data,
- Conserve water by improving the water efficiency of certain plumbing products and appliances.

Actions to Expedite Energy-Related Projects (EO 13212)

EO 13212 of May 18, 2001, directs the federal agencies to expedite their review of permits for energy-related projects while maintaining safety, public health and environmental protections.

Energy Policy Act of 2005

The Energy Policy Act of 2005 requires the BLM and Forest Service to enter into a Memorandum of Understanding to establish joint BLM and Forest Service policies and procedures to managing oil and gas leasing and operational activities such that there is consistency in lease stipulations across jurisdictional boundaries.

Bureau of Land Management Energy and Non-Energy Mineral Policy

This statement sets forth BLM policy for the management of energy and non-energy mineral resources (mineral resources) on public lands. It reflects the provisions of five important acts of Congress relating to mineral resources: the Domestic Minerals Program Extension Act of 1953; the Mining and Minerals Policy Act of 1970; the Federal Land Policy and Management Act of 1976; the National Materials and Minerals Policy, Research and Development Act of 1980; and the Energy Policy Act of 2005. This policy represents a commitment by the BLM to implement the requirements of these statutes consistent with BLM's other statutory obligations, as follows:

The Domestic Minerals Program Extension Act of 1953 states that each department and agency of the Federal Government charged with responsibilities concerning the discovery, development, production, and acquisition of strategic or critical minerals and metals shall undertake to decrease further, and to eliminate where possible, the dependency of the United States on overseas sources of supply of each such material.

The Mining and Minerals Policy Act of 1970 declares that it is the continuing policy of the Federal Government to foster and encourage private enterprise in the development of a stable domestic minerals industry and the orderly and economic development of domestic mineral resources. This act includes all minerals, including sand and gravel, geothermal, coal, oil and gas.

The Federal Land Policy and Management Act of 1976 reiterates that the 1970 Mining and Minerals Policy Act shall be implemented and directs that public lands be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other resources.

The National Materials and Minerals Policy, Research and Development Act of 1980 requires the Secretary of the Interior to improve the quality of minerals data in Federal land use decision-making.

The Energy Policy Act of 2005 encourages energy efficiency and conservation; promotes alternative and renewable energy sources; reduces dependence on foreign sources of energy; increases domestic production; modernizes the electrical grid; and encourages the expansion of nuclear energy.

The BLM recognizes that public lands are an important source of the Nation's energy and non-energy mineral resources, some of which are critical and strategic. The BLM is responsible for making public lands available for orderly and efficient development of these resources under principles of multiple use management, and the concept of sustainable development as was defined at the World Summit on Sustainable Development in 2002, in Johannesburg, South Africa.

The following principles will guide the BLM in managing mineral resources on public lands:

- Except for Congressional withdrawals, public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative actions are clearly justified in the national interest in accordance with the DOI Land Withdrawal Manual 603 DM 1, and BLM regulations at 43 CFR §2310. Petitions to the Secretary of the Interior for revocation of land withdrawals for mineral exploration and development will be evaluated through the land use planning process.

- The BLM endorses the Sustainable Development Plan of Implementation applicable to mineral resources signed by 193 countries, including the United States; in Johannesburg in 2002. This plan encourages social, environmental, and economic considerations before decisions are made on mineral operations. The BLM actively encourages development by private industry of public land mineral resources, and promotes practices and technology that least impact natural and human resources.

- The BLM will adjudicate and process mineral patent applications, permits, operating plans, mineral exchanges, leases and other mineral use authorizations for public lands in a manner to prevent unnecessary or undue degradation, in a timely and efficient manner, and will require financial assurances to provide for reclamation of the land and for other purposes authorized by law. Mine closure and reclamation considerations include alternative forms of use such as for landfills, wind farms, biomass facilities and other industrial uses, to attract partnerships to utilize the existing mine infrastructure for a future economic opportunity.

- The BLM land use planning and multiple-use management decisions will recognize that, with few exceptions, mineral exploration and development can occur concurrently or sequentially with other resource uses. The least restrictive stipulations that effectively accomplish the resource objectives or uses will be used. The BLM will coordinate with surface owners when the Federal minerals estate under their surface ownership is proposed for development.

- Land use plans will reflect geological assessments and mineral potential on public lands through existing geology and mineral resource data, and to the extent feasible, through new mineral assessments to determine mineral potential. Partnerships with State Geologists and the U.S. Geological Survey for obtaining existing and new data should be considered.

- The BLM will work closely with Federal, State and Tribal governments to reduce duplication of effort while processing mineral related permit applications.

- The BLM will monitor locatable, salable and leasable mineral operations to ensure proper resource recovery and evaluation, production verification, diligence and enforcement of terms and conditions. The BLM will ensure receipt of fair market value for mineral materials, and appropriate royalty rates for leasable commodities unless otherwise provided for by statute.

- The BLM will continue to develop e-Government solutions that will provide for electronic submission and tracking of applications for exploration and development of mineral resources. The BLM will continue to provide public access to mineral records, including spatial display of all types of authorizations and mineral resource data.

- The BLM will maintain and enhance the understanding, skills, and abilities of effective professional, technical, and managerial personnel knowledgeable in adjudication, geology, mineral exploration and development.

- To the extent provided by law, regulation, secretarial order, and written agreement with the Bureau of Indian Affairs, the BLM will apply the above principles to the management of mineral resources and operations on Indian Trust lands in order to comply with its Trust Responsibilities.

Cultural Resources

The Antiquities Act of 1906

The Antiquities Act of 1906 (16 USC 431-433) protects objects of historic and scientific interest on public lands. It authorizes the President to designate historic landmarks and structures as national monuments and provides penalties for people who damage these historic sites. The Act has two main components: (1) a criminal enforcement component, which provides for the prosecution of persons who appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity on lands owned or controlled by the United States, and (2) a component that authorizes a permit for the examination of ruins and archeological sites and the gathering of objects of antiquity on lands owned or controlled by the United States.

Historic Sites Act of 1935

The Historic Sites Act (16 USC 461) declares national policy to identify and preserve historic sites, buildings, objects, and antiquities of national significance, thereby providing a foundation for the National Register of Historic Places (NRHP).

National Historic Preservation Act of 1966

The National Historic Preservation Act of 1966 (NHPA), as amended (16 USC 470), expands protection of historic and archeological properties to include those of national, state, and local significance. The NHPA (in Section 106) requires federal agencies to take into account the potential effects of agency actions on properties listed on or eligible for the NRHP. Agencies are also required to consult with the State Historic Preservation Office (SHPO), and sometimes with the Advisory Council on Historic Preservation, concerning those effects. The SHPO is also sometimes consulted concerning applicable methods for determining whether there are NRHP-eligible properties in the area of potential effect of an agency undertaking, whether properties are eligible, and appropriate mitigation measures. The NHPA (in Section 110) also requires federal agencies to identify properties that may qualify for listing on the NRHP, to evaluate and nominate such places to the register, and to develop plans for their management. Section 110 of the NHPA requires federal agencies to develop proactive programs to interpret archeological resources for the benefit of the public. The 1992 amendments to the NHPA call for federal agencies to conduct Native American consultation on projects that may affect sites or resources that Tribes consider sensitive, sacred or culturally important.

Protection and Enhancement of the Cultural Environment of 1971 (EO 11593)

Protection and Enhancement of the Cultural Environment directs federal agencies to locate, inventory, nominate and protect federally owned cultural resources eligible for the NRHP, and to ensure that their plans and programs contribute to preservation and enhancement of non-federally owned resources.

American Indian Religious Freedom Act of 1978

The American Indian Religious Freedom Act (42 USC 1996) clarifies U.S. policy pertaining to the protection of Native Americans' religious freedom. The special nature of Native American religions has frequently resulted in conflicts between federal laws and policies and religious freedom. The Act establishes a policy of protecting and preserving the inherent right of individual Native Americans (including American Indians, Eskimos, Aleuts, and Native Hawaiians) to believe, express and exercise their traditional religions.

Archeological Resources Protection Act of 1979

The Archeological Resource Protection Act, as amended (16 USC 470a, 470cc, 470ee), requires permits for the excavation or removal of federally administered archeological resources, encourages increased cooperation among federal agencies and private individuals, provides stringent criminal and civil penalties for violations, and requires federal agencies to identify important resources vulnerable to looting and to develop a tracking system for violations. ARPA requires federal agencies to establish a program to increase public awareness of the significance of the archaeological resources located on public lands and Indian lands and the need to protect such resources.

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act (25 USC 3001) is a federal law passed in 1990 that provides a process for museums and federal agencies to return certain Native American cultural items—human remains, funerary objects, sacred objects, and objects of cultural patrimony—to lineal descendants, culturally affiliated Native American tribes and Native Hawaiian organizations. It also addresses consultation with Native Americans for the excavation and/or removal of cultural items, and the discovery of cultural items made during land use activities.

The NAGPRA requires: 1) that Federal Agencies consult with tribes in regards to the repatriation of human remains and four types of cultural objects held in their collections; 2) that they consult with Native Americans in regards to the protection of burial sites on Federal land, both those known/suspected and those inadvertently discovered; 3) that the agency consults with Tribes on disposition/control of cultural items and human remains found on federal lands [25 USC 3002(a)]; 4) that Federal agencies will only allow excavation and removal of Native American items and human remains from Federal lands with a permit which is issued only after consultation with tribes [25 USC 3002(c)]; and 5) provides penalties for illegal trafficking [18 USC 1170].

Indian Sacred Sites (EO 13007)

EO 13007, signed in 1996, requires each executive branch agency with statutory or administrative responsibility for the management of federal lands to accommodate access to and ceremonial use of Native American sacred sites by Native American religious practitioners and avoid adversely affecting the physical integrity of such sacred sites, whenever possible. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

Indian Sacred Sites, as defined in Executive Order (EO) 13007, are “any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion.” Indian Sacred Sites are not always eligible for the NRHP; however, pursuant to the guidelines in EO 13007, they receive the same protective measures as NRHP-eligible historic properties. Indian Sacred Sites [EO 13007] also mandates that Federal agency permitted actions cannot block Tribal access to sacred sites. To protect traditional Native American cultural resources, the locations are often kept confidential and not released to the public (BLM 2003).

Consultation and Coordination with Indian Tribal Governments (EO 13175)

EO 13175, signed in 2000, required federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

Trails for America in the 21st Century (EO 13195)

EO 13195, signed in 2001, requires federal agencies, to the extent permitted by law and where practicable—and in cooperation with tribes, states, local governments and interested citizen groups—to protect, connect, promote and assist trails of all types throughout the United States.

Preserve America (EO 13287)

EO 13287, signed in 2003, requires the Federal Government to lead the preservation of America's heritage by actively advancing the protection, enhancement, and contemporary use of the historic properties owned by the government and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties.

Hazardous Materials

Comprehensive Environmental Response, Compensation and Liability Act of 1980

The Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 USC 9601–9673), provides for liability, risk assessment, compensation, emergency response and cleanup (including the cleanup of inactive sites) for hazardous substances. The Act requires federal agencies to report sites where hazardous wastes are or have been stored, treated, or disposed of and requires responsible parties, including federal agencies, to clean up releases of hazardous substances.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act, as amended by the Federal Facility Compliance Act of 1992 (42 USC 6901–6992), authorizes the U.S. EPA to manage, by regulation, hazardous wastes on active disposal operations. The Act waives sovereign immunity for federal agencies with respect to all federal, state and local solid and hazardous waste laws and regulations. Federal agencies are subject to civil and administrative penalties for violations and to cost assessments for the administration of the enforcement.

Emergency Planning and Community Right-to-Know Act of 1986

The Emergency Planning and Community Right-to-Know Act of 1986 (42 USC 11001–11050) requires the private sector to inventory chemicals and chemical products, to report those in excess of threshold planning quantities, to inventory emergency response equipment, to provide annual reports and support to local and state emergency response organizations, and to maintain a liaison with the local and state emergency response organizations and the public.

Paleontological Resources

Paleontological Resources Preservation Act (summarized)

Significance of the Law:

This is the first legislation specifically addressing the management of paleontological resources on Federal lands. BLM's management of paleontological resources was primarily authorized under the Federal Land Policy and Management Act (FLPMA) of 1976, the National Environmental Protection Act (NEPA) of 1969, and a host of lesser laws prior to enactment of this legislation.

As most of these existing laws did not specifically address paleontological resources directly, management was based on phrases such as "protect...the quality of scientific...and other values" (FLPMA) or that "important historic, cultural and natural aspects of our national heritage..." should be protected (NEPA). This left words like "quality," "scientific," "important" and "natural aspects" open for interpretation,

especially when dealing with issues of permitting requirements, theft, and mitigation; and these interpretations differed among agencies. Additionally, the broader implications of management were not considered, such as hobby collecting, commercial sales of non-scientific fossils, and just how far our management of the resource could legally extend. These FLPMA and NEPA statements were also focused solely on 'protection' rather than overall 'management,' therefore leaving unaddressed the opportunities for public interpretation, research, educational activities or other proactive efforts.

A Federal law addressing paleontological resources on Federal lands will eliminate or reduce most of these concerns. It will also recognize that paleontological resources are a legitimate, important resource that should be managed; beyond the vague 'protect important public values' principles. The mandates in the Paleontological Resources Preservation Act (PRPA) are actually quite similar to BLM's current management policies and practices, therefore little shift in our present approaches will result. However, this now gives us firm, clear direction - with the weight of law - to manage in this manner.

In summation, most of our management of paleontological resources has been based on our interpretations of indirect legislation, regulations, and policies, therefore it's been somewhat tenuous and subject to questioning. This Act will now provide us with firm legislative footing to properly manage all aspects of this resource.

Management Issues:

This law states that casual (hobby) collection of fossils will be allowed; limited to reasonable amounts of common invertebrate and plant fossils, for non-commercial personal use. BLM did allow hobby collection of common invertebrate and plant fossils previously, but this was authorized under regulation and therefore was potentially subject to change at any time.

There will now be stricter penalties for unlawful collection of paleontological resources. Because paleontological resources were not specifically identified in other laws, which would then bring them under any penalty sections those laws may contain, it was always difficult to charge offenders with anything more stringent than theft of government property and a $500 fine, plus damages. Many of the more complete dinosaur skeletons sell for $50,000 to several million dollars, so a $500 fine was inconsequential and of little deterrent. The PRPA includes criminal and civil penalties for theft of paleontological resources, with possible penalties including up to five years in jail, and fines based on market or scientific value, costs of restoration, and any other factors considered relevant by the agency. Multiple offenses can be assessed for double the amount.

We will also have better consistency between agencies. This has not been a major issue; as most land managing agencies were similar in their overall approach, especially in recent years. But, there were a number of inconsistencies in the details of management approaches – the USGS, for example, has wanted to make specific locality data available to the public (primarily researchers) through written publications or web sites, but the BLM and other agencies treat this information as proprietary, and even exempt it from FOIA requests.

Significant points and details:

Although many of these points reflect current policy, these now carry the weight of law, rather than regulations, policy statements, Instruction Memoranda or simple guidance; all subject to agency modification.

- Casual collecting is defined as "the collecting of a reasonable amount of common invertebrate and plant paleontological resources for non-commercial personal use...resulting in only negligible

disturbance to the Earth's surface and other resources." It's further stated that "the terms 'reasonable amount', 'common invertebrate and plant paleontological resources' and 'negligible disturbance' shall be determined by the Secretary." Sec. 6301 ("Secretary" refers to the Secretary of the Interior [and all agencies])

- Paleontological Resource is defined as "any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth..." and goes on to specifically exclude archeological and cultural (human graves, mostly) resources. Sec. 6301

- "The Secretary shall manage and protect paleontological resources on Federal land **using scientific principles and expertise**." (my emphasis) Sec. 6302 (a)

- Permits are required for collecting of paleontological resources, except:

- "The Secretary shall allow casual collecting without a permit..." on BLM, BOR, and National Forest System lands, consistent with other laws and policies. Sec. 6304 (a)(1) and (2)

- Criteria for issuance of a permit include: the applicant is qualified; the activity is undertaken to further paleontological knowledge or for public education; the activity is consistent with any management plans; the methods of collecting will not threaten significant natural or cultural resources. Sec. 6304 (b)

- Permits will contain such terms and conditions as necessary, and shall include requirements that: fossils collected from public lands remain the property of the United States; the paleontological resources and copies of associated records will be preserved in an approved repository; specific locality data will not be released by the permittee or repository without the written permission of the Secretary. Sec. 6304 (c)

- Areas may be closed to collecting or access restricted to protect paleontological resources. Sec. 6304 (e)

- Prohibited Acts include: trafficking or offering to traffic in paleontological resources, if the person knew or should have known they were illegally collected from public lands; sell or purchase, or offer for sale or purchase, any paleontological resource, if the person knew or should have known they were illegally collected from public lands. Sec. 6306 (a)

- No false labeling. Includes false records, accounts and identifications. Sec. 6306 (b)

- This would mean intentional false labeling; not honest mistakes or preliminary identifications.

- Penalties include fines based on value of the fossils and up to five years in jail; second or subsequent violations may result in doubling the penalties. Sec. 6306 (c)

- Amount of penalties should consider: the scientific or fair market value of the paleontological resource; the cost of restoration and repair of the resource and the locality; any other factors considered relevant by the agency. Sec. 6307 (a)

- Penalties collected can be used only to: protect, restore, or repair the paleontological resources and the sites they came from; provide educational materials to the public; payment of rewards. Sec. 6307 (d). Penalty fees do not go into the general fund or any other fund or activity.

- Rewards are authorized for furnishing information which leads to a conviction or violation, up to 1/2 the penalties assessed. Sec. 6308 (a)

- All paleontological resources associated with a violation or conviction is subject to forfeiture. Sec. 6308 (b) (the final legislation eliminated the draft provision that would have allowed seizure of equipment and vehicles used in connection with the violation)

- Seized paleontological resources may be transferred to Federal or non-Federal educational institutions. Sec. 6308 (c) (Will probably be limited to approved repositories)

- Information concerning the nature and specific location of a paleontological resource shall be exempt from FOIA, with a few key exemptions. Sec. 6309

- This law does not apply to, or require a permit for, casual collecting of a rock or mineral. Sec. 6311 (3)

- This law does not affect any land other than Federal land or affect the lawful collection or sale of paleontological resources from land other than Federal land. Sec. 6311 (4)

(These last two points are in contrast to much of the misinformation that was circulating among rock club websites and other communications prior to passage).

Next Steps:

The BLM (and other agencies) will develop formal regulations that will expand on these points, create the additional details needed for implementation, and assure consistency with all other laws, regulations, and policies. Because of the mandate for the DOI and DOA to coordinate (Sec. 6302 (b), regulations may be cooperatively developed, to result in Uniform Regulations. Whether all the regulations will be developed in this manner, or whether some will be done within a specific agency, is unknown at this time. Uniform Regulations will probably be written initially by interagency paleontology staff, followed by reviews at each agency. For the BLM, this review will include all paleontology staff, other resource staff, the BLM solicitors (lawyers) and agency management people. At this time, time frames and procedures for this process have not been determined. It is expected that implementation of the provisions of the law will be accomplished in stages, with some PRPA sections enacted with little or no regulations needed, while other sections may not be fully implemented for several years.

Wildlife and Fisheries

Endangered Species Act of 1973

The purpose of the Endangered Species Act (ESA) is to protect and recover imperiled species and the ecosystems upon which they depend. It is administered by the USDI's USFWS and the Department of Commerce's National Marine Fisheries Service (NMFS). The USFWS has primary responsibility for terrestrial and freshwater organisms, while the responsibilities of NMFS are mainly marine species such as salmon and whales.

Bald and Golden Eagle Protection Act

The Bald Eagle Protection Act (16 USC 668) prohibits the take, possession, sale, purchase, barter, offer to sell, purchase, transport, export or import, of any bald eagle, alive or dead, or any part, nest, or egg thereof. "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb (50 CFR §22.3).

Fish and Wildlife Coordination Act

The Act of March 10, 1934, (16 USC 661 et seq.) as amended, authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with federal and state agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. The Act also directs the Bureau of Fisheries to use impounded waters for fish-culture stations and migratory-bird resting and nesting areas and requires consultation with the Bureau of Fisheries before the construction of any new dams to provide for fish migration. In addition, the Act authorizes the preparation of plans to protect wildlife resources, the completion of wildlife surveys on public lands, and the acceptance by the federal agencies of funds or lands for related purposes provided that land donations receive the consent of the state in which they are located.

The amendments enacted in 1946 require consultation with the USFWS and the fish and wildlife agencies of states where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted…or otherwise controlled or modified" by any agency under a federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources."

Fish and Wildlife Improvement Act of 1978

The Fish and Wildlife Improvement Act of 1978 (16 USC 7421; 92 Stat. 3110), Public Law 95-616, authorizes the Secretaries of the Interior and Commerce to establish, conduct, and assist with national training programs for state fish and wildlife law enforcement personnel. It also authorized funding for research and development of new or improved methods to support fish and wildlife law enforcement. The law provides authority to the Secretaries to enter into law enforcement cooperative agreements with state or other federal agencies and authorizes the disposal of abandoned or forfeited items under the fish, wildlife, and plant jurisdictions of these Secretaries. Public Law 105-328, signed October 30, 1998, amended the Act to allow the USFWS to use the proceeds from the disposal of abandoned items derived from fish, wildlife, and plants to cover the costs of shipping, storing and disposing of those items.

Fish and Wildlife Conservation Act of 1980

The Fish and Wildlife Conservation Act (USC 2901–2911), commonly known as the Nongame Act, encourages states to develop conservation plans for nongame fish and wildlife of ecological, educational, aesthetic, cultural, recreational, economic or scientific value. The states may be reimbursed for a percentage of the costs of developing, revising, or implementing conservation plans approved by the Secretary of the Interior. Amendments adopted in 1988 and 1989 directed the Secretary to undertake research and conservation activities for migratory nongame birds.

Migratory Bird Treaty Act of 1918 and EO 13186

The Migratory Bird Treaty Act (16 USC 703–712. § 703) makes taking, killing, or possessing migratory birds unlawful. It shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or eggs of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof, included in the terms of the conventions between the United States and Great Britain for the protection of migratory birds concluded August 16, 1916 (39 Stat. 1702); the United States and the United Mexican States for the protection of migratory birds and game mammals concluded February 7, 1936; the United States and the Government of Japan for the protection of migratory birds and birds in danger of extinction, and their environment concluded March 4, 1972 [1]; and the

convention between the United States and the Union of Soviet Socialist Republics for the conservation of migratory birds and their environments concluded November 19, 1976 (50 CFR §10.12). Under Executive Order 13186, federal agencies are responsible for implementing the provisions of the Migratory Bird Treaty Act by promoting conservation principles and management practices into agency activities. Federal agencies must ensure that federal actions are evaluated for potential impacts on migratory birds.

Sikes Act of 1960

The Sikes Act (16 USC 670a–670o, 74 Stat. 1052), as amended, Public Law 86-797, approved September 15, 1960, provides for cooperation by the Departments of the Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States. Key amendments to the Act that affect this EIS are highlighted below:

- An amendment enacted August 8, 1968 (Public Law 90-465, 82 Stat. 661), authorized a program for development of outdoor recreation facilities.

- Public Law 93-452, signed October 18, 1974 (88 Stat. 1369), authorized conservation and rehabilitation programs on Department of Energy (DOE), National Aeronautics and Space Administration (NASA), Forest Service, and BLM lands. These programs are carried out in cooperation with the states by the Secretary of the Interior and on Forest Service lands by the Secretary of Agriculture.

- Public Law 97-396, approved December 31, 1982 (96 Stat. 2005), provided for the inclusion of endangered plants in conservation programs developed for BLM, Forest Service, NASA, and DOE lands.

- Public Law 105-85, approved November 18, 1997 (11 Stat. 2017, 2018, 2020, 2022), added that each integrated natural resources management plan (INRMP) prepared under this act should provide for the sustainable use by the public of natural resources, to the extent that the use is not inconsistent with the needs of fish and wildlife resources. Public Law 105-85 also requires that the Secretary of the Interior, in consultation with state fish and wildlife agencies, submit a report annually on the amounts expended by the USDI and state fish and wildlife agencies on activities conducted pursuant to INRMPs to respective congressional committees with oversight responsibilities.

Federal Cave Resources Protection Act of 1988

The purpose of the Federal Cave Resources Protection Act (16 USC 63) is to secure, protect and preserve significant caves on federal lands for the perpetual use, enjoyment, and benefit of all people and to foster increased cooperation and exchange of information between governmental authorities and those who use caves located on federal lands for scientific, education, or recreational purposes.

Wild Horses

Wild Free Roaming Horse and Burro Act of 1971

The Wild Free Roaming Horse and Burro Act of 1971 provides for the management, protection and control of wild horses and burros on public lands and authorizes “adoption” of wild horses and burros by private individuals. Regulations applicable to wild horse and burro management on BLM-administered lands are provided in 43 CFR §4700.

Other Policy

Regional Mitigation Manual Section (MS)-1794

Regional mitigation is a landscape-level approach to strategically planning and implementing mitigation, including pre-identifying potential mitigation project sites, projects and measures. The BLM uses or requires mitigation to ensure the agency achieves its resource and value objectives when authorizing land-uses, including BLM-initiated action, under the BLM's multiple-use mission.

The BLM cannot always mitigate the direct and indirect impacts from land-use authorizations to an acceptable level at the location of the impacts (onsite mitigation). In order to achieve the BLM's resource and value objectives, it may be appropriate to compensate for the direct and indirect impacts of a use-authorization by performing mitigation outside of the area of impact. Mitigation outside of the area of impact occurs by replacing or providing similar or substitute resources or values through restoration, enhancement, creation or preservation.

The BLM's policy is to consider mitigation outside the area of impact when it is not feasible or practical to mitigate impacts to an acceptable level in the same area as the use-authorization. In order to ensure an efficient process for identifying potential sites that would benefit from mitigation projects and measures, the BLM will take a regional approach. The regional approach involves anticipating future mitigation needs and strategically identifying mitigation sites, projects, and measures that can help the BLM achieve it resource and value objectives. This regional approach to mitigation planning will occur across the landscape, regardless of land ownership and proximity to the impacts.

A regional mitigation approach shifts the BLM's mitigation focus from permit-by-permit mitigation requirements to strategic, pre-planned efforts. Regional mitigation allows for the pooling of resources to help fully, rather than partially, restore or conserve strategic mitigation sites. Permit applicants, partners, stakeholders, and the public will benefit from the greater certainty afforded by pre-identifying mitigation needs and costs.

In addition to ensuring adequate onsite mitigation, the BLM will take a regional (i.e. landscape-level) approach to planning and implementing mitigation outside the area of impact. This will include identifying potential sites, projects, and measures that could be appropriate for the mitigation of impacts to resources and values caused by land-use authorizations. The BLM will accomplish this by the following:

- Anticipating future mitigation needs and identifying potential sites that could benefit from mitigation projects and measures, rather than managing mitigation on an unplanned or permit-by-permit basis. To the extent practical, regional mitigation sites will be selected through the land use planning process and/or regional mitigation strategies;

- Prioritizing mitigation sites, projects and measures with the potential for multiple, landscape-scale benefits rather than implementing mitigation at smaller scales without broader impact;

- Focusing mitigation sites, projects and measures where the impacts of the use-authorization can be best mitigated and BLM can achieve the most benefit to its resource and value objectives, regardless of land ownership;

- Selecting mitigation sites, projects and measures that will be effective, durable over time, and will be in addition to current management obligations;

- Selecting mitigation sites, projects and measures based on a scientifically sound understanding of the use-authorization's impacts, the landscape condition of the impacted resource or value, current trends affecting that condition, and potential for improving the condition. If available and appropriate, the BLM will use regional scientific assessments to inform this process (e.g., BLM's Rapid Ecoregional Assessments or the Western Governors Association's Crucial Habitat Assessment Tool);

- Considering sites where impacts to several resources or values can be mitigated at one location;

- Considering the direct and indirect, positive or negative, impacts to adjacent properties when evaluating the need for mitigation and identifying mitigation sites, projects and measures; and

- Coordinating early in the process with potentially affected landowners and agencies.

Regional Mitigation Strategies – Managing Large-scale Projects

Regional Mitigation Strategies are an effective tool for involving stakeholders in planning and efficiently managing Greater Sage-Grouse mitigation on a regional or landscape-level basis where the BLM anticipates large-scale projects and intensive, new development. The intent of Regional Mitigation Strategies, beyond fulfilling the concepts identified in §1.6(B)(1) includes the following:

- Increasing permitting efficiency and financial predictability for applicants by preplanning mitigation needs; and

- Enhancing the ability of Federal and State governments, Tribes, nongovernmental organizations, and resource users to invest in larger scale mitigation efforts through prioritization of investments and pooling of financial resources.

Regional Mitigation Strategies should include the following elements:

- A transparent stakeholder engagement process;

- A description of regional baseline conditions against which unavoidable impacts are assessed;

- The establishment and prioritization of regional mitigation objectives;

- The establishment of a method for calculating mitigation fees for unavoidable adverse impacts that warrant mitigation;

- The evaluation of appropriate mitigation sites, projects and/or measures;

- The identification and establishment of a structure to hold and apply mitigation investment funds; and

- The development of long-term monitoring and adaptive management requirements to evaluate and maximize the effectiveness of mitigation projects and measures.

A CCAA is a voluntary agreement whereby landowners agree to manage their lands to remove or reduce threats to species at risk of being listed under the ESA. In return for managing their lands to the benefit of a species at risk, landowners receive assurances against additional regulatory requirements should that species ever be listed under the ESA. Under a CCAA, the USFWS will issue enrolled landowners Enhancement of Survival permits pursuant to section 10(a)(1)(A) of the ESA for a period of 20 years. Since the agreement is voluntary, the landowner can end it at any point, although in doing so they would give up any assurances. Permits would be issued to participating landowners contingent on development of a site-specific sage-grouse conservation plan that is consistent with this CCAA.

Appendix F – Mitigation Guidelines for Surface-Disturbing and Disruptive Activities on Wyoming BLM Lands

Introduction

Wyoming Mitigation Guidelines are a compilation of practices employed by the Bureau of Land Management (BLM) to mitigate impacts from surface disturbance. They apply to activities such as, but not limited to, road or pipeline construction, range improvements, and permitted recreation activities. The guidelines are designed to protect resources such as soils and vegetation, wildlife habitat, and cultural or historic properties. The guidelines are presented as an appendix of this Approved Resource Management Plan Amendment (ARMPA) for easy reference as they apply to many resources and derive from many laws. All BLM RMPs have included these guidelines as appendices. The guidelines are not land use decisions; rather they are examples of mitigation measures that could be applied, as appropriate, based on site-specific National Environmental Policy Act (NEPA) analysis for individual proposals. Comment on the use and application of specific mitigation measures can be made during the NEPA process for individual proposals. Because mitigation measures change or are modified, based on new information, the guidelines are updated periodically for all field offices in Wyoming.

These guidelines are primarily for the purpose of attaining statewide consistency in how requirements are determined for avoiding and mitigating environmental impacts and resource and land use conflicts. Consistency in this sense does not mean that identical requirements would be applied for all similar types of land use activities that may cause similar types of impacts. Nor does it mean that the requirements or guidelines for a single land use activity would be identical in all areas.

The EIS for the RMP does not decide or dictate the exact wording or inclusion of these guidelines. Rather, the guidelines are used in the RMP EIS process as a tool to help develop the RMP alternatives and to provide a baseline for comparative impact analysis in arriving at RMP decisions. These guidelines will be used in the same manner in analyzing activity plans and other site-specific proposals. These guidelines and their wording are matters of policy. As such, specific wording is subject to change primarily through administrative review, not through the RMP EIS process. Any further changes that may be made in the continuing refinement of these guidelines and any development of program-specific standard stipulations will be handled in another forum, including appropriate public involvement and input.

Purpose

The purpose of the "Wyoming BLM Mitigation Guidelines" is to inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands. These guidelines have been written in a format that will allow for the addition of specific or specialized mitigation following the submission of a detailed plan of development or other project proposal, and an environmental analysis.

Those resource activities or programs currently without a standardized set of permit or operation stipulations can use the mitigation guidelines as stipulations or as conditions of approval, or as a baseline for developing specific stipulations for a given activity or program.

Because use of the mitigation guidelines was integrated into the RMP EIS process and will be integrated into the site-specific environmental analysis process, the application of stipulations or mitigation requirements derived through the guidelines will facilitate consistency with planning decisions at plan implementation.

Mitigation Guidelines

Surface Disturbance Mitigation Guideline

Surface disturbance will be controlled or prohibited in the following areas or conditions. For federal oil and gas lease operations, under 43 CFR 3101.1-2 and the terms of the lease (BLM Form 3100-11), the authorized officer may require reasonable measures to minimize adverse impacts to other resource values, land uses, and users not addressed in lease stipulations at the time operations are proposed. Such reasonable measures may include, but are not limited to, modification of siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. At a minimum, measures shall be deemed consistent with lease rights granted provided they do not: require relocation of proposed operations by more than 200 meters; require that operations be sited off the leasehold; or prohibit new surface disturbing operations for a period in excess of 60 days in any lease year.

- Slopes in excess of 25 percent.
- Within important scenic areas (Class I and II Visual Resource Management Areas).
- Within 500 feet of surface water and/or riparian areas.
- Construction with frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur.
- Within 500 feet of interstate highways and 200 feet of other existing rights-of-way (i.e., U.S. and state highways, roads, railroads, pipelines, power lines).
- Within ¼-mile of occupied dwellings.

Guidance

The intent of the surface disturbance mitigation guideline is to inform interested parties (potential lessees, permittees, or operators) that when one or more of the above conditions exist, surface disturbing activities will be prohibited unless or until a permittee or the designated representative and the surface management agency arrive at an acceptable plan for mitigation of anticipated impacts. This negotiation will occur prior to development.

Specific criteria (e.g., 500 feet from water) have been established based upon the best information available. However, geographical areas and time periods must be delineated at the field level.

Wildlife Mitigation Guideline

A. To protect important big game winter habitat, activities or surface use will not be allowed from November 15 to April 30 within certain areas encompassed by the authorization.

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

B. To protect important raptor and/or sage and sharp-tailed grouse nesting habitat, activities or surface use will not be allowed from February 1 to July 31 within certain areas encompassed by the authorization. The same criteria apply to defined raptor and game bird winter concentration areas from November 15 to April 30.

   Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

   Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

C. No activities or surface use will be allowed on that portion of the authorization area identified within (legal description) for the purpose of protecting (e.g., sage/sharp-tailed grouse breeding grounds, and/or other species/activities) habitat.

   Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

D. Portions of the authorized use area legally described as (legal description), are known or suspected to be essential habitat for (name) which is a threatened or endangered species. Prior to conducting any onsite activities, the lessee/permittee will be required to conduct inventories or studies in accordance with BLM and United States Fish and Wildlife Service (USFWS) guidelines to verify the presence or absence of this species. In the event that (name) occurrence is identified, the lessee/permittee will be required to modify operational plans to include the protection requirements of this species and its habitat (e.g., seasonal use restrictions, occupancy limitations, facility design modifications).

Guidance

The Wildlife Mitigation Guideline is intended to provide two basic types of protection: seasonal restriction and prohibition of activities or surface use (2c). Item 2d is specific to situations involving threatened or endangered species. Legal descriptions will ultimately be required and should be measurable and legally definable. There are no minimum subdivision requirements at this time. The area delineated can and should be defined as necessary, based upon current biological data, prior to the time of processing an application and issuing the use authorization. The legal description must eventually become a part of the condition for approval of the permit, plan of development, and/or other use authorization.

The seasonal restriction section identifies three example groups of species and delineates three similar timeframe restrictions. The big game species including elk, moose, deer, pronghorn, and bighorn sheep, all require protection of crucial winter range between November 15 and April 30. Elk and bighorn sheep also require protection from disturbance from May 1 to June 30, when they typically occupy distinct calving and lambing areas. Raptors include eagles, accipiters, falcons (peregrine, prairie, and merlin), buteos (ferruginous and Swainson's hawks), osprey, and burrowing owls. The raptors and sage and sharp-tailed grouse require nesting protection between February 1 and July 31. The same birds often require protection from disturbance from November 15 through April 30 while they occupy winter concentration areas.

Item 2c, the prohibition of activity or surface use, is intended for protection of specific wildlife habitat areas or values within the use area that cannot be protected by using seasonal restrictions. These areas or values must be factors that limit life-cycle activities (e.g., sage-grouse strutting grounds, known threatened and endangered species habitat).

Exception, waiver, or modification of requirements developed from this guideline must be based on environmental analysis of proposals (e.g., activity plans, plans of development, plans of operation, and applications for permit to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis.

Cultural Resource Mitigation Guideline

When a proposed land use has potential for affecting the characteristics which qualify a cultural property for the National Register of Historic Places (NRHP), mitigation will be considered. In accordance with Section 106 of the National Historic Preservation Act, procedures specified in 36 Code of Federal Regulation (CFR) 800 will be used in consultation with the Wyoming State Historic Preservation Officer and the Advisory Council on Historic Preservation in arriving at determinations regarding the need and type of mitigation to be required.

Guidance

The preferred strategy for treating potential adverse effects on cultural properties is "avoidance." If avoidance involves project relocation, the new project area may also require a cultural resources survey. If avoidance is imprudent or unfeasible, appropriate mitigation may include excavation (data recovery), stabilization, monitoring, protection barriers and signs, or other physical and administrative measures.

Reports documenting results of cultural resources survey, evaluation, and the establishment of mitigation alternatives (if necessary) shall be written according to standards contained in BLM Manuals, the cultural resource permit stipulations, and in other policy issued by the BLM. These reports must provide sufficient information for Section 106 consultation. Reports shall be reviewed for adequacy by the appropriate BLM cultural resource specialist. If cultural properties on, or eligible for, the NRHP are located within these areas of potential impact and cannot be avoided, the authorized officer shall begin the Section 106 consultation process in accordance with the procedures contained in 36 CFR 800.

Mitigation measures shall be implemented according to the mitigation plan approved by the BLM authorized officer. Such plans are usually prepared by the land use applicant according to BLM specifications. Mitigation plans will be reviewed as part of Section 106 consultation for NRHP-eligible or listed properties. The extent and nature of recommended mitigation shall be commensurate with the significance of the cultural resource involved and the anticipated extent of damage. Reasonable costs for mitigation will be borne by the land use applicant. Mitigation must be cost effective and realistic. It must consider project requirements and limitations, input from concerned parties, and be BLM-approved or BLM- formulated.

Mitigation of paleontological and natural history sites will be treated on a case-by-case basis. Factors such as site significance, economics, safety, and project urgency must be taken into account when making a decision to mitigate. Authority to protect (through mitigation) such values is provided for in FLPMA, Section 102(a)(8). When avoidance is

not possible, appropriate mitigation may include excavation (data recovery), stabilization, monitoring, protection barriers and signs, or other physical and administrative protection measures.

Special Resource Mitigation Guideline

To protect (resource value), activities or surface use will not be allowed (i.e., within a specific distance of the resource value or between date to date) in (legal description).

Application of this limitation to operation and maintenance of a developed project must be based on environmental analysis of the operational or production aspects.

Exception, waiver, or modification of this limitation in any year may be approved in writing, including documented supporting analysis, by the authorized officer.

Example Resource Categories (Select or identify category and specific resource value):

a. Recreation areas
b. Special natural history or paleontological features
c. Special management areas
d. Sections of major rivers
e. Prior existing rights-of-way
f. Occupied dwellings
g. Other (specify).

Guidance

The Special Resource Mitigation Guideline is intended for use only in site-specific situations where one of the first three general mitigation guidelines will not adequately address the concern. The resource value, location, and specific restrictions must be clearly identified. A detailed plan addressing specific mitigation and special restrictions will be required prior to disturbance or development and will become a condition for approval of the permit, plan of development, or other use authorization.

Exception, waiver, or modification of requirements developed from this guideline must be based on environmental analysis of proposals (e.g., activity plans, plans of development, plans of operation, and applications for permit to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis.

No Surface Occupancy Guideline

No Surface Occupancy (NSO) will be allowed on the following described lands (legal description) because of (resource value).

Example Resource Categories (Select or identify category and specific resource value):

a. Recreation areas (e.g., campgrounds, historic trails, national monuments)
b. Major reservoirs/dams
c. Special management area (e.g., known threatened or endangered species habitat, areas suitable for consideration for wild and scenic rivers designation)

d. Other (specify).

Guidance

The No Surface Occupancy Mitigation Guideline is intended for use only when other mitigation is determined insufficient to adequately protect the public interest and is the only alternative to "no development" or "no leasing." The legal description and resource value of concern must be identified and be tied to an NSO land use planning decision.

Waiver of, or exception(s) to, the NSO requirement will be subject to the same test used to initially justify its imposition. If, upon evaluation of a site-specific proposal, it is found that less restrictive mitigation would adequately protect the public interest or value of concern, a waiver or exception to the NSO requirement is possible. The record must show that because conditions or uses have changed, less restrictive requirements will protect the public interest. An environmental analysis must be conducted and documented (e.g., environmental assessment, environmental impact statement, etc., as necessary) in order to provide the basis for a waiver or exception to an NSO planning decision. Modification of the NSO requirement will pertain only to refinement or correction of the location(s) to which it applied. If the waiver, exception, or modification is found to be consistent with the intent of the planning decision, it may be granted. If found inconsistent with the intent of the planning decision, a plan amendment would be required before the waiver, exception, or modification could be granted.

When considering the "no development" or "no leasing" option, a rigorous test must be met and fully documented in the record. This test must be based on stringent standards described in the land use planning document. Since rejection of all development rights is more severe than the most restrictive mitigation requirement, the record must show that consideration was given to development subject to reasonable mitigation, including "no surface occupancy." The record must also show that other mitigation was determined to be insufficient to adequately protect the public interest. A "no development" or "no leasing" decision should not be made solely because it appears that conventional methods of development would be unfeasible, especially where an NSO restriction may be acceptable to a potential permittee. In such cases, the potential permittee should have the opportunity to decide whether to go ahead with the proposal (or accept the use authorization), recognizing that an NSO restriction is involved.

Regional Mitigation Guideline

The regional mitigation guideline provides policies, procedures, and instructions for a landscape-scale approach to mitigating impacts to resources and values managed by the BLM through preparing and conducting regional mitigation strategies, planning and implementation. The following sections provide a summary of the information provided in IM-WO-2013-142 Regional Mitigation, Manual Section 1794. The reader is referred to IM-WO-2013-142 for further details and explanations.

A. Regional Mitigation Strategies

Regional Mitigation Strategies are not decisions, but are instead assessments or studies that can inform subsequent BLM planning and implementation decisions. For that reason, the BLM can develop Regional Mitigation Strategies outside of the NEPA and planning processes. The BLM can also combine its development of a Regional Mitigation Strategy with a land use planning process (see section C below). Regional Mitigation Strategies should include:

- A transparent stakeholder engagement process
- A description of regional baseline conditions against which unavoidable impacts are assessed
- A discussion of potential regional mitigation objectives
- An evaluation of appropriate mitigation sites, projects and/or measures
- A discussion of potential methods for calculating mitigation fees for unavoidable adverse impacts that warrant mitigation
- A discussion of a potential structure to hold and apply mitigation investment funds
- An evaluation of appropriate long-term monitoring and adaptive management to evaluate and maximize the effectiveness of mitigation projects and measures.

B. Regional Mitigation Planning

The BLM may use the land use planning process to identify potential mitigation sites and measures on BLM-managed lands. When addressing regional mitigation opportunities through the land use planning process, the BLM should:

- Describe regional baseline conditions against which unavoidable impacts are assessed
- Establish and prioritize regional mitigation objectives for the planning area
- Identify appropriate land-use allocations or areas for landscape-level conservation and management actions to achieve regional mitigation objectives (e.g., Areas of Critical Environmental Concern (ACEC) or sage-grouse priority habitat)
- Develop long-term monitoring and adaptive management requirements to evaluate and maximize the effectiveness of mitigation projects and measures.

C. Mitigation Implementation

Mitigation implementation involves identifying and implementing appropriate mitigation for specific land use authorizations, and should consider the following, as appropriate for the project:

- Types of Mitigation. When a resource or value will be degraded or lost due to a land-use authorization, the BLM may need to consider whether restoration, enhancement, creation, and/or preservation outside the area of impact may be appropriate.
- Mitigation as a Project Condition. The BLM may expressly condition its approval of the land-use authorization on an applicant's commitment to perform or cover the costs of mitigation, both onsite and outside the area of impact.
- Mitigating Onsite vs. Mitigating Outside the Area of Impact. BLM policy is to place a priority on mitigating impacts to an acceptable level onsite, to the extent practical, through avoidance, minimization, rectification, or reduction of impacts over time. However, in situations where onsite mitigation alone may not be sufficient to adequately mitigate impacts and achieve BLM resource and value objectives, it may be appropriate to consider mitigation outside the area of impact.
- Mitigation Priority Order. The priority order for mitigating resource impacts is to 1) avoid, 2) minimize, 3) rectify, or 4) reduce the impact over time, and if necessary, 5) mitigate outside the area of impact, preferably at regionally selected mitigation sites. In some cases, mitigation sites near where the resource or value impact is occurring (but still outside the area of impact), will be the most appropriate location for performing mitigation activities.
- Mitigation on Federal and Non-Federal Lands. Mitigation sites, projects, and measures should be focused where the impacts of the use authorization can be best mitigated and the BLM can achieve the most benefit to its resource and value objectives, regardless of land ownership. The most appropriate area for mitigation projects may be on federal lands (the BLM or another agency) or on non-federal lands.
- Non-BLM Impacts – Mitigated on BLM-managed Lands. Consistent with a regional approach, mitigation projects may also occur on BLM-managed lands, when the site of the impact is

located on lands not managed by the BLM. The BLM may authorize these mitigation projects and measures through a land-use authorization, which may include a cooperative agreement.

- Determining Whether Mitigation Outside the Area of Impact is Appropriate. Mitigation outside the area of impact may be appropriate when: 1) it is expected that the direct and indirect impacts of the proposal would not be mitigated to an acceptable level onsite; and 2) mitigation outside the area of impact can successfully mitigate the remaining unavoidable impacts to an acceptable level. Mitigation outside the area of impact may also be an appropriate consideration for the BLM when other land management agencies or landowners identify indirect impacts to lands they own and/or manage from a project on BLM-managed lands and the impacts cannot be adequately mitigated onsite.
- Identifying Levels of Acceptable and Unacceptable Impacts. Not all adverse or unavoidable impacts can or must be fully mitigated, either onsite or outside the area of impact. A certain level of adverse or unavoidable impact may be acceptable, and the BLM will identify these impacts during the NEPA analysis and acknowledge them in the decision document (such as a decision record or record of decision).
- Direct Benefit to the Resource, Not Another Authorized Resource User. Mitigation should focus on the benefits to the resources impacted; the BLM should not design mitigation measures with the primary intent of providing direct benefits to other authorized uses or users of a resource that may be adversely affected by the action.
- Types of Mitigation – In-kind and Out-of-kind. In-kind mitigation is generally preferred to out-of-kind, although there may be exceptions. In-kind mitigation is the replacement or substitution of resources or values that are of the same type and kind as those impacted. Out-of-kind mitigation is the replacement or substitution of resources or values that are not the same type and kind as those impacted, but are related or similar.
- Degree of Impact and the Importance of the Affected Resource. It is important to weigh the degree to which a resource or value is affected and the relative importance of the affected resource or value.
- Long-term Durability. The BLM should ensure that mitigation conducted outside the area of impact will, at a minimum, be effective for as long as the land-use authorization affects the resources and values. This would include the time it takes to appropriately restore the affected onsite resources and values after the expiration of the land-use authorization.
- Phasing-in Mitigation. It may be appropriate to compensate for the expected slow decline in an onsite resource or value by restoring or improving lands outside the area of impact over a period of several years. This phased-in mitigation may be appropriate where the onsite resource is important, but is not a critical or protected resource or value or is not critical to the overall functioning of that resource or value in the local area or region. In addition, if an applicant phases in a construction project over time, and it may be appropriate to phase-in mitigation over time.
- Mitigating Post-Approval, but Prior to Development. It may be appropriate to compensate for the impacts of a land-use authorization after approval and in advance of those impacts occurring. Where any impacts would have an immediate and substantial negative impact on the achievement of BLM resource and value objectives, the use-authorization may need to require implementation of the mitigation prior to beginning the authorized land use.
- Quality and Quantity. One unit of mitigation outside the area of impact may not necessarily be sufficient to compensate for one unit of direct onsite surface impact. The BLM will identify mitigation ratios through the NEPA process. Mitigation must be roughly proportional to the impact caused by the regulated activity and reasonably related to the impact.
- Co-Benefits or Layering Mitigation. Consider how mitigation for one resource or value may also have the co-benefit of mitigating for other resources or values. Consider, as a part of the

selection criteria, sites where impacts to several resources or values can be mitigated at one location outside the area of impact.

- Identifying Mitigation through the NEPA Analysis and Decision Process. The BLM will consider and analyze proposals for mitigation through the NEPA process, and may condition approval of a project on the applicant's commitment to address avoidable impacts through onsite mitigation and unavoidable impacts through mitigation conducted outside the area of impact.
- Managing Mitigation Outside of the Area of Impact. Mitigation management responsibilities include the following: 1) implementation monitoring, 2) implementation tracking, 3) identifying the responsible party for conducting oversight, 4) securing performance bonding, 5) requiring an implementation and monitoring plan, and 6) enforcement.
- Contributions. In addition to onsite mitigation, the applicant may agree to perform mitigation outside the area of impact by implementing mitigation projects and measures directly (labor), purchasing private land or conservation easements, and/or contributing financially to a mitigation fund. The BLM may accept monetary contributions from an applicant to fund specific mitigation projects, either on or off BLM-managed lands. Mitigation or financial contribution agreements must address specific requirements as identified in detail in the Regional Mitigation Manual Section 1794 (see IM-WO-2013-142).
- Agency Cooperators. It may be appropriate to involve cooperating agencies and other interested parties in planning and implementing mitigation. The BLM must retain decision-making authority for projects conducted on BLM-managed public lands. In undertaking cooperative efforts, the authorized officer must ensure compliance with the Federal Advisory Committee Act (FACA), if applicable.
- Non-Federal Parties Managing Mitigation on Non-Federal Lands. Non-Federal parties may manage mitigation on non-Federal lands when the resource impact is on lands managed by the BLM. The BLM's role here is to consider the proposed mitigation in its authorization decision, as well as to ensure the non-federal party informs the BLM on the progress and/or completion of proposed mitigation measures and the effectiveness of the measures over the life of the project.

Guidance

Regional mitigation is a landscape-scale approach to mitigating impacts to resources and values managed by the BLM, in order to provide for sustained yield of resources on the Public Lands. This regional approach involves anticipating future mitigation needs and strategically identifying mitigation sites and measures that can help the BLM achieve its resource and value objectives. The BLM may accomplish this through the development of regional mitigation strategies, land use planning, and implementation decisions. A regional approach to mitigation occurs across the landscape and focuses on attaining the highest mitigation benefit, regardless of land ownership. A regional mitigation approach also shifts the BLM's mitigation focus from a permit-by-permit perspective to a proactive regional-scale mitigation planning perspective.

The BLM cannot always mitigate the direct and indirect impacts from land-use authorizations to an acceptable level at the location of the impacts (onsite mitigation). To achieve and sustain BLM resource and value objectives, it may be appropriate to compensate for the direct and indirect impacts of a BLM authorization by conditioning that authorization on the performance of mitigation outside the area of impact. Mitigation outside the area of impact occurs by replacing or providing similar or substitute resources or values through restoration, enhancement, creation, or preservation. The BLM's policy

is to consider mitigation outside the area of impact when it is not feasible or practical to mitigate impacts to an acceptable level in the same area as the use-authorization.

In addition to the guidance provided above, the BLM must consider individual projects or authorizations in the context of the particular law, regulation, and policy applicable to that project or authorization. The applicable law, regulation, or policy may provide additional or different authority for the consideration and use of mitigation. This guidance may supplement, but does not replace, mitigation requirements that may result from formal consultation under law or regulation, such as Section 7 of the Endangered Species Act, the National Historic Preservation Act, or wetlands mitigation requirements available to other agencies under the Clean Water Act.

Appendix G – Federal Oil and Gas Operations on Split Estate Lands

Purpose

The purpose of this appendix is to summarize the Bureau of Land Management's (BLM) procedures for considering proposals to conduct exploration and production operations on split estate federal oil and gas leases. This appendix is provided for information purposes only, and is not necessarily a complete statement of rights, obligations, or processes. This appendix is not a part of the BLM's land use plan decision for the Resource Management Plan (RMP). Any conflict with any statute or regulation is unintentional. In the event of a conflict, the statute or regulation controls. Federal oil and gas lessees and operators, and private surface owners, are advised to confer with the BLM at the time an action is proposed for BLM's consideration, in order to obtain information about the current regulations and policies that may apply to the proposal. Nothing in this appendix affects the authority of any Tribe or of the Bureau of Indian Affairs in any way. This RMP applies to federal lands as defined by the Federal Land Policy and Management Act of 1976, and does not apply to lands held in trust for any Tribe or for any individual Indian or Indians.

Definitions

Casual use (operations): "Casual use means activities involving practices that do not ordinarily lead to any appreciable disturbance or damage to lands, resources, or improvements. This term does not apply to private surface. Casual use includes surveying activities." (Onshore Oil and Gas Order No. 1, part II).

Lease: "Means any contract, profit share arrangement, joint venture or other agreement issued or approved by the United States under a mineral leasing law that authorizes exploration for, extraction of or removal of oil or gas." (Onshore Oil and Gas Order No. 1, part II).

Lease facility or *production facility*: "Production facilities means a lessee's or lease operator's pipes and equipment used on the leasehold to aid in extracting, processing, and storing oil and gas…" (64 Federal Register [FR] 32140). See also BLM Manual Section 2880 ("Mineral Leasing Act Rights-of-Way") at page 9.

Lease site: "Means any lands, including the surface of a severed mineral estate, on which exploration for, or extraction and removal of, oil or gas is authorized under a lease." (43 Code of Federal Regulation [CFR] 3160.0-5).

Lessee: "Means any person holding record title or owning operating rights in a lease issued or approved by the United States." (43 CFR 3160.0-5).

Operator: "Means any person or entity including but not limited to the lessee or operating rights owner, who has stated in writing to the authorized officer that it is responsible under the terms and conditions of the lease for the operations conducted on the leased lands or a portion thereof." (43 CFR 3160.0-5).

Public lands: "Means any land and interest in land owned by the United States within the several States and administered by the Secretary of the Interior through the Bureau of Land Management…" (Federal Land Policy Management Act of 1976, Sec. 103(e)).

Private surface owner: "Private Surface Owner means a non-federal or non-state owner of the surface estate and includes any Indian owner of surface estate not held in trust by the United States." (Onshore Oil and Gas Order No. 1, part II).

Split estate: "Split Estate means lands where the surface is owned by an entity or person other than the owner of the Federal or Indian oil and gas." (Onshore Oil and Gas Order No. 1, part II). "When tribal lands are held in trust or are subject to federal restrictions against alienation the Bureau of Indian Affairs is the Surface Managing Agency, but if lands are held in unrestricted fee, those lands are treated the same as private surface." (Preamble to Onshore Oil and Gas Order No. 1 revisions, 72 FR 10322-10323, March 7, 2007).

Surface Managing Agency: "Surface Managing Agency means any Federal or state agency having jurisdiction over the surface overlying Federal or Indian oil and gas." (Onshore Oil and Gas Order No. 1, part II).

General

In considering and authorizing exploration and development of split estate federal oil and gas leases, the BLM prefers that the operator and split estate surface owner reach a Surface Access Agreement for proposed oil and gas operations. The BLM coordinates with both the operator and surface owner, in accordance with the requirements of Onshore Oil and Gas Order No. 1, and generally provides the surface owner's lands the same level of resource (soil, water, vegetation, air, visual, cultural, etc.) protection as would be required on BLM-administered public lands.

"The BLM will offer the surface owner the same level of surface protection that the BLM provides on Federal surface. The BLM will not apply standards or conditions that exceed those that would normally be applied to Federal surface, even when requested by the surface owner." (The Gold Book, page 12).

Federal mineral lessees may enter onto a privately owned surface to the extent necessary to explore and produce the federal minerals in compliance with the relevant statutes, BLM regulations, and land use designations. The BLM does not have the authority to regulate a surface owner's use of the surface estate, but does have the authority to regulate the activities of federal mineral lessees and mining claimants. The BLM adds lease stipulations to split estate federal oil and gas leases in order to ensure that leasing decisions conform to the approved RMP for the area.

Operations

Geophysical

The BLM's authority to permit geophysical operations is described under 43 CFR §3150.0-1:

> *Geophysical exploration on public lands, the surface of which is administered by the Bureau, requires Bureau approval. The procedures in this part also apply to geophysical exploration conducted under the rights granted by any Federal oil and gas lease unless the surface is administered by the U.S. Forest Service. However, a lessee may elect to conduct exploration operations outside the rights granted by the lease, in which case authorization from the surface managing agency or surface owner may be required… The procedures of this part do not apply to… operations conducted on private surface overlying public lands unless such operations are conducted by a lessee under the rights granted by the Federal oil and gas lease…*

As BLM Handbook H-3150-1[1] at pages 1–2 explains:

> *In those situations where Federal minerals are underlying private surface and the private surface owner's consent is obtained, the BLM is not to become involved. However, when landowner consent*

[1] Onshore Oil and Gas Geophysical Exploration Surface Management Requirements. January 9, 2007.

for access to the surface cannot be obtained for geophysical exploration operations on a Federal lease by the lease operator, the geophysical operation is to be authorized using the Sundry Notice process…[2]

When the geophysical exploration operator is the Federal lessee or designated operator of the lessee, it is to file a Sundry Notice… with the BLM and provide notification to the surface owner by certified mail that it intends to enter onto the lands and conduct lease operations. The lessee/operator must then submit proof to the BLM authorized officer that the surface owner has been notified. The lessee or operator must also submit proof to the BLM authorized officer that it has a current and adequate bond payable to the United States for use by the surface owner for damages caused during exploration operations. The authorized officer must give the surface owner 30 days to comment on the proposed action before approving the Sundry Notice.

When a surface access agreement is reached to conduct geophysical operations on split estate lands with leased or unleased federal oil and gas, the BLM does not become involved.

The BLM will not accept a Notice of Intent (NOI) to Conduct Geophysical Operations, BLM Form 3150-4 or bond to permit entry to split estate lands with unleased federal oil and gas, since the BLM has not issued an oil and gas lease to allow for operations under 43 CFR Part 3160 (see 43 CFR 3150.0-1).

In order to conduct geophysical operations on split estate lands where a federal oil and gas lease has been issued and where an agreement with the surface owner has not been reached, the lessee or the operator must first obtain BLM authorization through an NOI that proposes entry to those lands in order to conduct geophysical operations. The lessee or designated operator must provide to the BLM a certification that a good-faith effort was made to: (a) notify the landowner prior to entry; (b) obtain a Surface Access Agreement; and (c) deliver a copy of the proposed NOI to the surface owner.[3] The NOI must also identify the surface owner and include the owner's name, address, and telephone number, if known. A good and sufficient bond to secure payment of applicable damages for the use and benefit of the surface owner must be provided to the BLM on BLM Form 3160-19. The lessee or designated operator must also submit to the BLM evidence of service of a copy of the bond upon the surface owner. Prior to authorizing the NOI proposing entry to the lands for which the bond has been submitted, the BLM notifies the surface owner and provides a 30-day period during which the surface owner may protest the sufficiency of the bond. If the sufficiency of the bond is protested, the BLM reviews the bond amount and determines if it is adequate. That decision by the BLM is subject to State Director review (SDR) upon a request by any adversely affected party and the State Director's decision is subject to appeal to the Interior Board of Land Appeals (IBLA).[4]

Notice of Staking/Application for Permit to Drill

Surveying and Staking Activities

The lessee or operator is encouraged to contact the surface owner of split estate lands early in the process of planning for exploration and development of a federal lease. This facilitates early discussion about the goals and objectives of both the surface owner and operator. Communication between the lessee or operator

[2] In BLM Washington Office Instruction Memorandum (IM) 2009-121, "Approval of Notice of Intent to Conduct Geophysical Exploration to Federal Oil and Gas Lessee on Split Estate", dated May 8, 2009, the BLM recognized that the Sundry Notice form (BLM Form 3160-5) is an imperfect form to use for permitting of geophysical operations. This policy clarified that the BLM will "no longer require the lessee or its operator to file a Sundry Notice" for the purpose of proposing entry to federal leases where a surface owner denies access to the lessee or its operator. In its place the BLM would use the NOI form (BLM Form 3150-4).

[3] See Onshore Oil and Gas Order No. 1, Part VI.

[4] See 43 CFR §3165.3(b). See, e.g., William P. Maycock, 176 IBLA 206 (2008).

and surface owner can reduce potential conflicts, thereby reducing misunderstandings and permit processing times.

For surveying and staking activities, "[t]he operator is responsible for making access arrangements with the appropriate Surface Managing Agency (other than the BLM) or private surface owner." (Onshore Oil and Gas Order No. 1, part III.D.2.a).

"No entry on split estate lands for surveying and staking should occur without the operator first making a good faith effort to notify the surface owner. Also, operators are encouraged to notify the BLM, as appropriate, before entering private lands to stake for Federal mineral estate locations." (Onshore Oil and Gas Order No. 1, part III.D.2.b).

Aside from surveying and staking the proposed well location, road, pipeline, and/or other lease facilities, the operator may also be required to conduct resource condition surveys of the leased lands.

"As provided in the oil and gas lease, the BLM may request that the applicant conduct surveys or otherwise provide information needed for the BLM's National Historic Preservation Act consultation with the State Historic Preservation Officer or Indian tribe or its Endangered Species Act consultation with the relevant fisheries agency. The Federal mineral lessee has the right to enter the property for this purpose, since it is a necessary prerequisite to development of the dominant mineral estate. Nevertheless, the lessee or operator should seek to reach agreement with the surface owner about the time and method by which any survey would be conducted." (Onshore Oil and Gas Order No. 1, part VI).

Onsite Inspection(s)

On split estate lands, the onsite inspection provides the opportunity for the BLM, operator, and surface owner to evaluate and discuss the proposed well location or lease facility in the field.

"Within 10 days of receiving the application, the BLM, in coordination with the operator and Surface Managing Agency, including the private surface owner in the case of split estate minerals, will schedule a date for the onsite inspection (unless the onsite inspection has already been conducted as part of a Notice of Staking)." (Onshore Oil and Gas Order No. 1, part III.E.2.a).

"On non-National Forest System lands, the BLM will invite the Surface Managing Agency and private surface owner, if applicable, to participate in the onsite inspection. If the surface is privately owned, the operator must furnish to the BLM the name, address, and telephone number of the surface owner if known." (Onshore Oil and Gas Order No. 1, part III.C).

At the onsite inspection, the BLM will consider applicable Best Management Practices (BMP) that would avoid or mitigate environmental impacts to natural resources. The onsite inspection provides the surface owner with the opportunity to review the proposed well location and/or lease facilities; provide information to the BLM and operator about resources, improvements, and land uses; and express preferences for BMPs to be used for lease operations.

"All parties who attend the onsite inspection will jointly develop a list of resource concerns that the operator must address in the application for permit to drill (APD). The operator will be provided a list of these concerns either during the onsite inspection or within 7 days of the onsite inspection. Surface owner concerns will be considered to the extent practical within the law." (Onshore Oil and Gas Order No. 1, part III.C).

"The BLM will invite the surface owner to the onsite inspection to assure that their concerns are considered." (Onshore Oil and Gas Order No. 1, part VI).

Required Components of a Complete Application for Permit to Drill for Split Estate Operations

Description of Surface Ownership

A description of the surface ownership (with name, address, and telephone number, if known) along with a certification must be included in the APD submitted by the operator to the BLM.

"The operator must indicate (in a narrative) the surface ownership at the well location, and of all lands crossed by roads that the operator plans to construct or upgrade, including, if known, the name of the agency or owner, phone number, and address. The operator must certify that they have provided a copy of the Surface Use Plan of Operations (SUPO) required in this section to the private surface owner of the well site location, if applicable, or that they made a good faith effort if unable to provide the document to the surface owner." (Onshore Oil and Gas Order No. 1, part III.D.4.k).

Surface Access Agreement or Waiver

For operations on leased split estate lands, the operator must undertake a good faith effort to reach a Surface Access Agreement.

"[I]n the case of actual oil and gas operations, the operator must make a good faith effort to notify the private surface owner before entry and make a good faith effort to obtain a Surface Access Agreement from the surface owner… The Surface Access Agreement may include terms or conditions of use, be a waiver, or an agreement for compensation. The operator must certify to the BLM that: (1) It made a good faith effort to notify the surface owner before entry; and (2) That an agreement with the surface owner has been reached or that a good faith effort to reach an agreement failed." (Onshore Oil and Gas Order No. 1, part VI).

"The operator must make a good faith effort to provide a copy of their Surface Use Plan of Operations to the surface owner." (Onshore Oil and Gas Order No. 1, part VI). The operator must also provide a copy of any revisions to the SUPO to the surface owner. If required under Onshore Oil and Gas Order No. 6 ("Hydrogen Sulfide Operations"), the BLM requires the operator to provide a copy of the Public Protection Plan to the surface owner.

"The surface use agreement between the surface owner and the operator is confidential. However, the APD Surface Use Plan of Operations must contain sufficient detail about any aspects of the agreement necessary for National Environmental Policy Act of 1969 (NEPA) documentation and to determine that the operations will be in compliance with laws, regulations, Onshore Orders, and agency policies." (The Gold Book, page 12).

"If the BLM's requirements conflict with provisions in the Surface [Access] Agreement, the operator or surface owner should disclose that conflict at the onsite or to the BLM in writing, and the BLM should consider those conflicts in making its final decision." (BLM's Split Estate Report to Congress at page 15). Thus, to the extent terms of the agreement may conflict with Conditions of Approval (COA) to the APD, the BLM should be made aware of those terms, so that they can be considered in the BLM's final decision.

"The BLM does not review the Surface Use Agreement and does not enforce portions of the Surface Use Agreement that are not contained within the approved APD." (BLM's Split Estate Report to Congress at page 17.)

Bonding In Lieu of a Surface Access Agreement or Waiver

It is the preference of the BLM that the operator and surface owner reach a Surface Access Agreement. However, in those cases where an agreement is not reached, the BLM follows the procedural requirements in the BLM's regulations and policies. A good and sufficient bond to secure payment of applicable damages for the use and benefit of the surface owner must be provided to the BLM on BLM Form 3160-19. The lessee or designated operator must also submit to the BLM evidence of service of a copy of the bond upon the surface owner. Prior to authorizing the APD proposing entry to the lands for which the bond has been submitted, the BLM notifies the surface owner and provides a 30-day period during which the surface owner may protest the sufficiency of the bond. If the sufficiency of the bond is protested, the BLM reviews the bond amount and determines if it is adequate. That decision by the BLM is subject to SDR upon a request by any adversely affected party and the State Director's decision is subject to appeal to the IBLA.[5]

"If no agreement was reached with the surface owner, the operator must submit an adequate bond (minimum of $1,000) to the BLM for the benefit of the surface owner sufficient to: (1) pay for loss or damages; or (2) as otherwise required by the specific statutory authority under which the surface was patented and the terms of the lease. Surface owners have the right to appeal the sufficiency of the bond. Before the approval of the APD, the BLM will make a good faith effort to contact the surface owner to assure that they understand their rights to appeal." (Onshore Oil and Gas Order No. 1, part VI).

"The bond amount will be reviewed by the BLM to assure that it is sufficient based on the appropriate law." (Preamble to Onshore Oil and Gas Order No. 1 revisions, 72 FR 10323, March 7, 2007).

If operations under an approved APD result in loss or damages that are compensable under the statutes by which the lands were patented, the surface owner may obtain judgment from a court of competent jurisdiction. The BLM will then release from the bond the amount ordered by the court to the surface owner.

Approval of the APD

The BLM considers the views of the surface owner before approving the APD. The BLM must prepare an environmental record of review (43 CFR 3162.5-1(a)) to document its evaluation of potential resource impacts, including documentation of NEPA compliance.

"The BLM must comply with NEPA, the National Historic Preservation Act, the Endangered Species Act, and related Federal statutes when authorizing lease operations on split estate lands where the surface is not federally owned and the oil and gas is Federal. For split estate lands within Forest Service administrative boundaries, the BLM has the lead responsibility, unless there is a local BLM/Forest Service agreement that gives the Forest Service this responsibility." (Onshore Oil and Gas Order No. 1, part VI).

"After the APD is approved the operator must make a good faith effort to provide a copy of the Conditions of Approval to the surface owner. The APD approval is not contingent upon delivery of a copy of the Conditions of Approval to the surface owner." (Onshore Oil and Gas Order No. 1, part VI).

Sundry Notices

Operations proposed by Sundry Notice that will result in additional surface disturbance or re-disturbance of previously reclaimed areas require a SUPO.

"Prior to commencing any operation on the leasehold which will result in additional surface disturbance, other than those authorized under § 3162.3–1 or § 3162.3–2 of this title, the operator shall submit a proposal

[5] See 43 CFR §3165.3(b). See, e.g., William P. Maycock, 176 IBLA 206 (2008).

on Form 3160–5 to the authorized officer for approval. The proposal shall include a surface use plan of operations." (43 CFR 3162.3-3).

"The operator must certify on Form 3160–5 that they have made a good faith effort to provide a copy of any proposal involving new surface disturbance to the private surface owner in the case of split estate." (Onshore Oil and Gas Order No. 1, part VIII.A).

For review of Final Abandonment Notices submitted by an operator on split estate lands, the BLM will consider the views of the surface owner.

"If applicable, the private surface owner will be notified and their views will be carefully considered." (Onshore Oil and Gas Order No. 1, part XII).

"In cases where the Surface Managing Agency or private surface owner desires to acquire an oil and gas well and convert it to a water supply well or acquire a water supply well that was drilled by the operator to support lease operations, the Surface Managing Agency or private surface owner must inform the appropriate BLM office of its intent before the approval of the APD in the case of a dry hole and no later than the time a Notice of Intent to Abandon is submitted for a depleted production well… The Surface Managing Agency or private surface owner must reach agreement with the operator as to the satisfactory completion of reclamation operations before the BLM will approve any abandonment or reclamation. The BLM approval of the partial abandonment under this section, completion of any required reclamation operations, and the signed release agreement will relieve the operator of further obligation for the well. If the Surface Managing Agency or private surface owner acquires the well for water use purposes, the party acquiring the well assumes liability for the well." (Onshore Oil and Gas Order No. 1, part IX.B).

"Completion of a well as plugged and abandoned may also include conditioning the well as water supply source for lease operations or for use by the surface owner or appropriate Government Agency, when authorized by the authorized officer. All costs over and above the normal plugging and abandonment expense will be paid by the party accepting the water well." (43 CFR 3162.3-4(b)).

Emergency Operations

"In the event of an emergency, the operator may take immediate action without prior Surface Managing Agency approval to safeguard life or to prevent significant environmental degradation. The BLM must receive notification of the emergency situation and the remedial action taken by the operator as soon as possible, but not later than 24 hours after the emergency occurred. If the emergency only affected drilling operations and had no surface impacts, only the BLM must be notified. If the emergency involved surface resources on other Surface Managing Agency lands, the operator should also notify the Surface Managing Agency and private surface owner within 24 hours." (Onshore Oil and Gas Order No. 1, Part IV.d).

References

- Onshore Oil and Gas Order No. 1
- Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development ("The Gold Book")
- 43 CFR Part 3150
- 43 CFR Part 3160
- 43 CFR Subpart 3814

- BLM Wyoming–Wyoming Oil and Gas Conservation Commission Memorandum of Understanding

- BLM Handbook H-3150-1 (Geophysical Handbook)

- BLM Form 3160-019 ("Bond For Surface Owner Protection")

- BLM Brochure: Split Estate–Rights, Responsibilities, and Opportunities

- BLM Brochure: Split Estate–Cultural Resource Requirements on Private Surface–Federal Minerals for Oil and Gas Development

- BLM-Washington Office Instruction Memorandum 2003-131 ("Permitting Oil and Gas on Split Estate Lands and Guidance for Onshore Oil and Gas Order No. 1"), April 2, 2003.

- BLM-Washington Office Instruction Memorandum 2007-165 ("Split Estate Report to Congress–Implementation of Fluid Mineral Leasing and Land Use Planning Recommendations"), July 26, 2007.

- Energy Policy Act of 2005, Section 1835 ("Split-Estate Federal Oil and Gas Leasing and Development Practices").

- Energy Policy Act of 2005–Section 1835–A Report to Congress (December 2006).

- BLM-Washington Office Instruction Memorandum 1989-201 ("Legal Responsibilities of BLM for Oil and Gas Leasing and Operations on Split Estate Lands"), January 4, 1989.

Appendix H – Wyoming Game and Fish Department Protocols for Treating Sagebrush in Greater Sage-Grouse Habitat

Sagebrush treatments have been implemented or proposed with the assumption of benefiting sage-grouse. Research, monitoring, and anecdotal observations suggest that treatments can result in beneficial, benign, or harmful impacts to sage-grouse habitat depending on many known and unknown factors.

These protocols are to be used to guide the development of Wyoming Game and Fish Department (WGFD) sponsored or supported sagebrush treatments. The purpose of these protocols is to provide a framework for WGFD projects to ensure that they are consistent with sage-grouse core area and non-core area stipulations. This framework will not answer all questions associated with treatments. It is assumed that these protocols may be revisited as new science becomes available. Communication with the WGFD Director's Office or sage-grouse coordinator will be necessary for many situations.

Core Area Treatments

The following sagebrush treatment protocols are designed to ensure future habitat treatments conform to the provisions of the Wyoming Governor's Executive Order 2015-4 (WY EO 2015-4), to conserve sage-grouse and prevent population declines in core habitat areas. Treatments that will NOT reduce sagebrush canopy cover to less than 15% are NOT subject to the Density/Disturbance Calculation Tool (DDCT) step prescribed below. However, such treatment proposals should still follow the other steps outlined in order to determine and document purpose and need, appropriately apply stipulations and monitor results. In northeast Wyoming core areas, treatments that will result in sagebrush canopy cover being reduced to less than 15% should not be conducted.

1) Determine and document the purpose and need for the treatment (adapted from Wyoming Interagency Vegetation Committee 2002):
    a) Evaluate the juxtaposition, extent, importance, and value of the sagebrush patch in the landscape (is this the only patch of sagebrush in the landscape?).
    b) Identify the sagebrush species/subspecies/variety and assess the ecological site potential and treatment effects.
    c) Determine the associated vegetation composition and condition (e.g., composition of desirable and non-desirable species and their response to treatment) and their contribution to wildlife habitat.
    d) Assess site potential and resilience of the site to recover.
    e) Assess other existing site influences (e.g., current grazing use, presence of noxious/exotic plant infestations, cumulative impacts, etc.).
    f) Evaluate past management history of the site.
    g) Establish post-treatment vegetation management objectives tiered to the management plan for the site.
    h) Create a baseline for short-term/long-term post-treatment monitoring of the site.
2) If there is justified purpose and need, then utilize the DDCT outlined in WY EO 2015-4 and conduct the prescribed analysis.
    a. If the cumulative disturbance, including the proposed treatment, is less than 5% of suitable sage-grouse habitat as defined in the Executive Order, the project may proceed.
        i. Recognize any treatment reducing sagebrush canopy cover to less than 15% will be considered disturbance for future disturbance calculations (adapted from Connelly 2000, Stiver et al. 2010).

ii. A project plan must be developed that considers, evaluates, and appropriately applies the following stipulations:

1) No treatment should occur within 0.6 mile of any occupied lek that results in less than 15% sagebrush canopy cover unless:

a) The proposed treatment is necessary to maintain the viability of the lek, such as removing conifers or sagebrush encroaching on the lek site.

2) Treatment implementation should not occur within 4 miles of any occupied lek from March 15 to June 30 (WGFD 2010).

3) Treatment implementation should not occur in designated and/or mapped sage-grouse winter concentration areas from November 15 to March 14 (WGFD 2010d).

4) Avoid the use of fire to treat sagebrush in less than 12-inch precipitation zones (Beck et al. 2009, Connelly 2000, Western Association of Fish and Wildlife Agencies [WAFWA] 2009).

5) Control and monitor noxious and/or invasive vegetation post-treatment.

6) Rest the treated area from grazing for two full growing seasons unless vegetation recovery dictates otherwise.

b) If the cumulative disturbance, including the proposed treatment, within the DDCT boundary, is greater than 5% of the suitable sage-grouse habitat and the goal of the treatment is to reduce sagebrush canopy cover to less than 15%, the project shall NOT proceed except when:

i. Acreage of treatment is reduced so cumulative disturbance does not exceed 5% of suitable habitat.

ii. The treatment is configured such that all treated habitat is within 60 meters of sagebrush habitat (adapted from Danvir 2002, Slater 2003, WGFD 2003d, Dahlgren et al. 2006) with 10% or greater canopy cover (Connelly et al. 2000) and no more than 20% of suitable sage-grouse habitat in the DDCT boundary is treated in this manner (adapted from Connelly et al. 2000).

3) Refer to the Bureau of Land Management/WAFWA Sage-Grouse Habitat Assessment Framework when conducting habitat evaluations to determine the need to treat sagebrush to enhance sage-grouse habitat and when devising standardized monitoring protocols to assess the effectiveness of treatments (Stiver et al. 2010).

4) In stands with less than 15% sagebrush cover pretreatment, any proposed treatment should be designed to maintain or improve sagebrush habitat (within the limits of the ecological site).

General Habitat Area Treatments

As is the case with industrial development outside of core habitat areas, there will be greater flexibility to conduct sagebrush treatments in general habitat areas. There can be more emphasis placed upon the habitat needs of species other than sage-grouse.

1. Determine and document the purpose and need for the treatment (adapted from Wyoming Interagency Vegetation Committee 2002):

a. Evaluate the juxtaposition, extent, importance and value of this sagebrush patch in the landscape (is this the only patch of sagebrush in the landscape?).

b. Identify the sagebrush species/subspecies/variety and understand the ecology and treatment effects.

c. Determine the associated vegetation composition and condition (e.g., composition of desirable and non-desirable species and their response to treatment) and their effects on wildlife habitat.

d. Consider site potential and resilience of the site to recover.

e. Assess the existence of other potential site influences (e.g., current grazing use, presence of noxious/exotic plant infestations, cumulative impacts, etc.).

f. Evaluate past management history of the site.

g. Establish post-treatment vegetation management objectives tiered to the future management plan.

h. Create a baseline for short-term/long-term post-treatment monitoring of the site.

2. Conduct the treatment.

3. Rest the treated area from grazing for two full growing seasons unless vegetation recovery dictates otherwise.

4. Monitor post treatment habitat conditions and grazing/browsing by ungulates to determine success.

5. Monitor and control noxious and/or invasive vegetation post-treatment.

Protocol Exceptions

Exceptions for treatments in core habitat areas will be considered only if it can be demonstrated by previous research the activity will not cause declines in sage-grouse populations. The demonstration must be based on monitoring data collected and analyzed with accepted scientific-based techniques.

Appendix I – Areas of Critical Environmental Concern Criteria

As part of the process for developing the Greater Sage-Grouse Resource Management Plan (RMP)/Land and Resource Management Plan (LRMP) (hereafter, land use plans [LUP]) Amendments, the U.S. Department of the Interior, Bureau of Land Management (BLM) planning team members reviewed all BLM administered public lands in the planning area to determine if any areas should be considered for designation as areas of critical environmental concern (ACEC) or if any existing ACEC designations should be modified or terminated. Only BLM-administered public lands can be considered for ACEC designation.

Areas of critical environmental concern are BLM lands where special management attention is needed to protect important and relevant values. Special management attention refers to management prescriptions developed during preparation of an RMP or amendment expressly to protect the important and relevant values of an area from the potential effects of actions permitted by the RMP, including proposed actions deemed to be in conformance with the terms, conditions, and decisions of the RMP (BLM Manual 1613).

To be a potential ACEC, a nominated area must meet the criteria of relevance and importance as outlined in 43 CFR 1610.7-2 and BLM Manual 1613. If the relevance and importance criteria are met, an area must be identified as a potential ACEC and considered for designation and management in the resource planning process. Designation is based on whether or not a potential ACEC requires special management attention in the selected plan alternative.

To be eligible for designation as an ACEC, an area must meet the relevance and importance criteria described in 43 Code of Federal Regulations (CFR) 1610.7-2 and BLM Manual 1613.

Relevance and importance are defined as follows:

> **Relevance.** There shall be present a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard.
>
> **Importance.** The above described value, resource, system, process, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to life or property.

An area meets the "relevance" criterion if it contains one or more of the following:

1. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).

2. A fish and wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species; or habitat essential for maintaining species diversity).

3. A natural process or system (including but not limited to endangered, nonsensitive, or threatened plan species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).

4. Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the resource management planning process that it has become part of a natural process.

An area meets the "importance" criterion if it further meets one or more of the following:

1. Has more than locally significant qualities, which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared with any similar resource.

2. Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change.

3. Has been recognized as warranting protection to satisfy national priority concerns or to carry out the mandates of the Federal Land Policy and Management Act (FLPMA).

4. Has qualities that warrant highlighting to satisfy public or management concerns about safety and public welfare.

5. Poses a significant threat to human life and safety or to property.

This report presents the completed evaluation forms for the nominated ACECs in the planning area. An ACEC that meets both relevance and importance criteria can be included in at least one management alternative analyzed in the LUP Amendments and EIS.

Table I-1. Greater Sage-Grouse Core Habitat Area (Alternative B) Relevance and Importance Evaluation

Area Considered:	Albany, Campbell, Carbon, Converse, Crook, Fremont, Goshen, Laramie, Lincoln, Natrona, Niobrara, Park, Platte, Sublette, Sweetwater, Teton, Uinta, and Weston Counties	
General Location:	Albany, Campbell, Carbon, Converse, Crook, Fremont, Goshen, Laramie, Lincoln, Natrona, Niobrara, Park, Platte, Sublette, Sweetwater, Teton, Uinta, and Weston Counties in Wyoming	
General Description:	Priority habitat areas for Greater Sage-Grouse in Wyoming.	
Acreage:	The total number of acres of core sage-grouse habitats on BLM/U.S. Department of Agriculture, Forest Service (Forest Service) administered lands is 9,876,565 acres. Of that total, 5,063,436 acres are BLM/Forest Service surface administration and would constitute the Public Proposed Sage-grouse Core Habitat ACEC.	
Values Considered:	Greater Sage-Grouse habitat.	
Relevance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
A significant historic, cultural, or scenic value	Yes	Although not the intent of the ACEC, due to its size and proposed restrictions on oil and gas and wind energy development especially, other sensitive resources would also benefit.
A fish and wildlife resource	Yes	Other than sage-grouse, the proposed ACEC area contains a mix of elk, mule deer, antelope, moose, winter, transition, parturition ranges and migration corridors, and elk feedgrounds; with some of the winter ranges in these key habitat areas being the terminuses of some of the longest intact migration routes in the lower 48 states. Sage-grouse brood rearing, nesting, winter concentration areas, and lek sites; pygmy rabbit habitats; sage-steppe songbirds nesting and brood-rearing occur throughout these primarily sage-steppe habitats. The sage-steppe habitats in the proposed core area is the most intact stands of habitat remaining for sagebrush obligate species many of which are considered BLM sensitive such as

		the pygmy rabbit, brewer's sparrow, loggerhead shrike, and sage sparrow.
A natural process or system	Yes	There are several areas of special status plant species within these sage-steppe habitat areas, such as Trelease's milk-vetch, Cedar Rim thistle and meadow pussytoes.
Natural hazards	No	There are no specifically identified natural hazards in the proposed sage-grouse key habitat areas.
Importance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
More than locally significant qualities	Yes	The proposed ACEC covers over six BLM Field Office Areas and three Forest Service Districts, and includes a large portion of the Wyoming Basin ecoregion and its associated sagebrush-steppe vegetative community and critical Greater Sage-Grouse core habitat. It also includes smaller portions of the Greater Yellowstone ecosystem and the Great Plains/High Plains ecoregion. The Wyoming Basin and its sage-steppe vegetative communities have been subject to intense fragmentation as oil and gas, coal, uranium, transmission lines, and other development has crisscrossed these vegetative communities with roads, pipelines, wellpads, compressor stations, transmission lines, and other forms of development. This cumulative buildup over time has reduced habitat effectiveness to the point that the Greater Sage-Grouse has been identified as eligible for listing (but currently precluded) under the Endangered Species Act (ESA).
Special qualities	Yes	Sage-steppe habitat conversion to agricultural operations and industrialization have limited the amount of suitable sage-grouse breeding, nesting, brood-rearing, and wintering habitats across Wyoming. In addition, continuous cycles of drought and competition for resources with domestic and wild ungulates have resulted in limitations and conflict for resources on the remaining habitats.
Warrants national priority/FLPMA protection	Yes	These issues have been recognized by the above referenced ESA listing by USFWS, as well as by the BLM, which is undergoing an EIS amendment to incorporate greater management protections for sage-grouse and their key habitat areas throughout the Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs planning areas and the Bridger-Teton National Forest, the Medicine Bow National Forest, and the Thunder Basin National Grassland.
Safety/public welfare concerns	No	Qualities regarding safety and public welfare are not present within the areas nominated as potential ACECs for sage-grouse habitat.
Poses a significant threat	No	Areas nominated as potential ACECs for Greater Sage-Grouse habitat do not pose a significant threat to human life and safety or to property.

Table I-2. Greater Sage-Grouse Habitat Area (Alternative C) Relevance and Importance Evaluation

Area Considered:	Albany, Carbon, Converse, Fremont, Lincoln, Natrona, Niobrara, Sublette, Sweetwater, Uinta, and Weston Counties
General Location:	Albany, Carbon, Converse, Fremont, Lincoln, Natrona, Niobrara, Sublette, Sweetwater, Uinta, and Weston Counties
General Description:	Audubon Important Bird Areas in Wyoming.

Acreage:	3,645,897 acres within the project area was nominated by the WildEarth Guardians.	
Values Considered:	Greater Sage-Grouse habitat, migratory birds.	
Relevance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
A significant historic, cultural, or scenic value	Yes	Although not the intent of the ACEC, due to its size and proposed restrictions on oil and gas and wind energy development especially, other sensitive resources would also benefit.
A fish and wildlife resource	Yes	Other than sage-grouse, the proposed ACEC area contains bird migration corridors. Sage-grouse brood rearing, nesting, winter concentration areas, and lek sites; sage-steppe songbirds nesting and brood-rearing occur throughout these primarily sage-steppe habitats. The sage-steppe habitats in the proposed core area contains the most intact stands of habitat remaining for sagebrush obligate species, many of which are considered BLM sensitive such as brewer's sparrow, loggerhead shrike, sage sparrow, and waterfowl important areas.
A natural process or system	Yes	There are several areas of special status plant species within these sage-steppe habitat areas, such as the Trelease's milk-vetch, Cedar Rim thistle, and meadow pussytoes.
Natural hazards	No	There are no specifically identified natural hazards in the proposed sage-grouse key habitat areas.
Importance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
More than locally significant qualities	Yes	The proposed ACEC covers over six BLM Field Office Areas and three Forest Service Districts, and includes a large portion of the Wyoming Basin ecoregion and its associated sagebrush-steppe vegetative community and critical Greater Sage-Grouse core habitat. It also includes smaller portions of the Greater Yellowstone ecosystem and the Great Plains/High Plains ecoregion. The Wyoming Basin and its sage-steppe vegetative communities have been subject to intense fragmentation as oil and gas, coal, uranium, transmission lines and other development has crisscrossed these vegetative communities with roads, pipelines, wellpads, compressor stations, transmission lines and other forms of development. This cumulative buildup over time has reduced habitat effectiveness to the point that the Greater Sage-Grouse has been identified as eligible for listing (but currently precluded) under the ESA.
Special qualities	Yes	Sage-steppe habitat conversion to agricultural operations and industrialization have limited the amount of suitable sage-grouse breeding, nesting, brood-rearing, and wintering habitats across Wyoming. In addition, continuous cycles of drought and competition for resources with domestic and wild ungulates have resulted in limitations and conflict for resources on the remaining habitats.
Warrants national priority/FLPMA protection	Yes	These issues have been recognized by the above referenced ESA listing by USFWS, as well as by the BLM, which is undergoing an EIS amendment to incorporate greater management protections for sage-grouse and their key habitat areas throughout the Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs planning areas and the Bridger-Teton National Forest, the Medicine Bow National Forest, and the Thunder Basin National Grassland.
Safety/public welfare concerns	No	Qualities regarding safety and public welfare are not present within the areas nominated as potential ACECs for sage-grouse habitat.

Poses a significant threat	No	Areas nominated as potential ACECs for Greater Sage-Grouse habitat do not pose a significant threat to human life and safety or to property.

Map I-1. Proposed Audubon Important Bird Areas, Area of Critical Environmental Concern

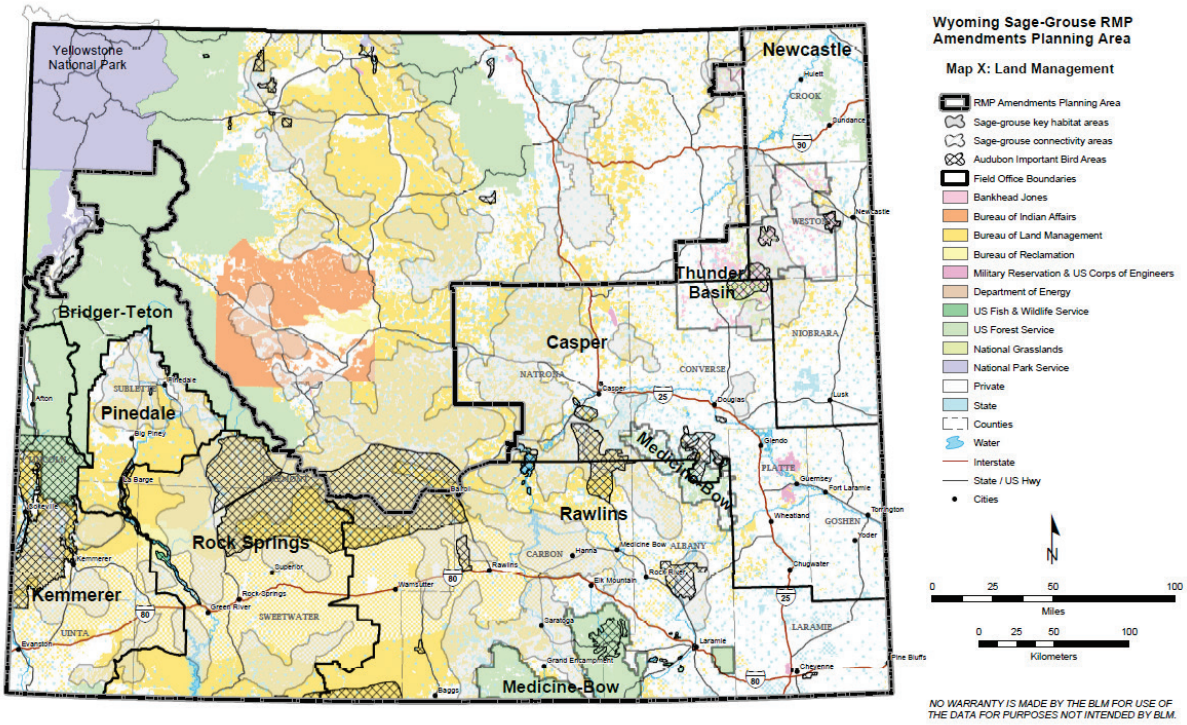


Table I-3. Pinedale Greater Sage-Grouse Relevance and Importance Evaluation

Area Considered:	Beaver Ridge, Fontenelle Creek, East Anticline	
General Location:	Sublette and Lincoln Counties, Wyoming	
General Description:	Priority habitat areas for Greater Sage-Grouse.	
Acreage:	54,800	
Values Considered:	Greater Sage-Grouse priority habitat, big game migration, cultural resources, big game crucial winter range.	
Relevance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
A significant historic, cultural, or scenic value	Yes	Native Americans historically knew the Green River as "Seed-ska-dee," their name for the sage hens, or "prairie chickens." Prehistorically, the strutting grounds within the Pinedale Field Office held thousands of birds making them easy prey and a food staple for early people of the Green River Valley.
A fish and wildlife resource	Yes	Core Area #1 (Beaver Ridge) at the north end of the field office is not only core sage-grouse habitat; it is also a major big game migration route

		from the Hoback and Noble Basin areas to the Pinedale Anticline and Ryegrass areas. A great majority of the area is already classified “No Surface Occupancy.” Protecting this area from leasing will slow development and allow passage of big game through the area while traveling to and from winter and summer range. There are also numerous cultural attributes existing in the area. Two sites of note include Fort Bonneville, constructed in 1832; and Beaver Rim which was reported to be the location of several bison kill and procurement locales. Six Trapper’s Rendezvous where held in the area. This brought hundreds of people together for the purpose of restocking supplies selling their furs and the camaraderie of the group experience. Prehistoric sites in the area range from several bison kill and procurement locales to short term camps. In addition, there are numerous eligible sites along big game migration corridors. This area also contains Visual Resource Management (VRM) open space and is classified VRM II and III. Core Area #2 (Fontenelle Creek) is composed of a large block of sage-grouse core area located at the south end of the field office and extending into the Kemmerer Field Office. In addition to this area being sage-grouse core area, it contains a large block of Big Game Winter Range. This area also contains VRM II, open space, and no development attributes. Core Area #3 (East Anticline) is primarily located along the Mesa breaks and contains another very important big game and sage-grouse wintering area. A late prehistoric expression occurs in and along the Mesa breaks, making the area significant and in need of further study. Much of the area is currently under lease suspension. Since studies have indicated a steep downward trend in mule deer populations on the Anticline, continued protection of this area through lease suspensions would likely benefit mule deer and other populations of wintering wildlife. In addition to the area’s importance to wildlife, it also contains numerous prehistoric and historic sites. 48SU2019 is considered a NRHP eligible cultural site of spiritual significance to Native Americans and is located in this vicinity. The area is partially classified as VRM Class II with some III.
A natural process or system	Yes	The nomination also meets the criterion for a natural system or process because of the condition of the sagebrush habitat in the nomination area.
Natural hazards	No	No natural hazards are known.
Importance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
More than locally significant qualities	No	Although the area contains habitat for Greater Sage-Grouse conservation, the area is not significantly unique or more important than other habitat areas in this region. Greater Sage-Grouse are distributed throughout the western United States. The portion of the distribution in Montana, Wyoming, North Dakota, South Dakota, Alberta, and Saskatchewan are designated as Management Zone I (Stiver et al. 2006). Management Zones are delineations of Greater Sage-Grouse populations and sub-populations within floristic zones with similar management issues. Within Management Zone I in Montana, Montana Fish, Wildlife and Parks designated core areas (MFWP 2009) and Wyoming Game and Fish Department (WGFD) has also designated core areas in Wyoming (WGFD 2009b). In addition, Montana Audubon has also designated five important bird areas for sage-steppe associated birds, including Greater Sage-Grouse, in Montana, most of which are contained within the MFWP core areas. While all of these areas are considered important to Greater Sage-Grouse conservation, the areas are dispersed throughout the region and

		are not significantly unique to a specific region or planning unit. In addition, Greater Sage-Grouse habitat in these core areas is owned by a number of different entities and habitat on BLM lands is not distinct from habitat managed by other ownership.
Special qualities	No	The area is not particularly fragile or sensitive to change as compared to other sites in Wyoming.
Warrants national priority/FLPMA protection	Yes	Satisfies national priority concerns.
Safety/public welfare concerns	No	No safety or public welfare concerns are known.
Poses a significant threat	No	No significant threats.

Map I-2. Proposed Pinedale Area of Critical Environmental Concern

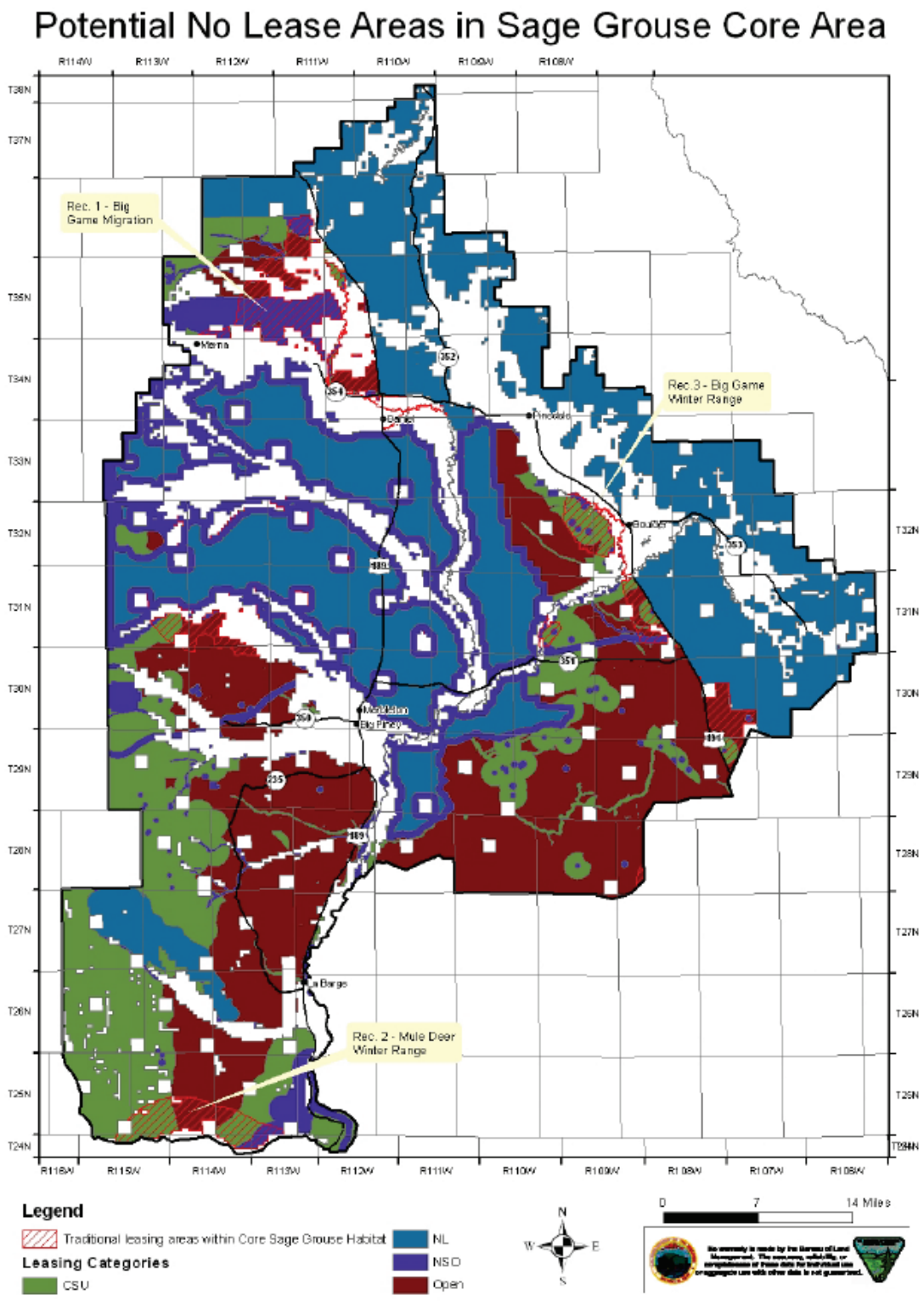


Table I-4. Newcastle Greater Sage-Grouse Relevance and Importance Evaluation

Area Considered:	Crook County	
General Location:	Area is south of Moorcroft and west of Upton. It includes all lands except lands managed by the U.S. Forest Service or the State of Wyoming in all or parts of Townships 48-45 and Ranges 66-68.	
General Description:	Priority habitat areas for Greater Sage-Grouse.	
Acreage:	The proposed no leasing area covers approximately 79,179 acres. Of the 79,179 acres 42,409 acres are federal mineral estate, 6,831 state minerals, and 29,939 acres of private mineral estate.	
Values Considered:	Greater Sage-Grouse priority/core habitat.	
Relevance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
A significant historic, cultural, or scenic value	No	Although historic, cultural and scenic values occur widespread on public lands, the nominations did not highlight any such values as part of the nomination for sage-grouse habitat. A general reference to the presence of various resource values without specifying why the values are significant in the context of an ACEC does not provide rationale for meeting this criterion.
A fish and wildlife resource	Yes	The area contains breeding, nesting, brood-rearing, and winter habitats for sage-grouse. There are currently three occupied leks within the proposed boundary of the No Leasing Area. The area proposed for No Leasing designation encompasses all of the seasonal and life cycle habitats required by sage-grouse during the year. Sage-grouse population declines throughout the west have caused serious concern for the species. Sage-grouse have been petitioned for listing under the ESA and is a designated Wyoming BLM sensitive species. While sagebrush communities exist throughout the West, the pressures on the sage-grouse habitat have threatened to elevate the species to a candidate for listing under the ESA. The area contained within the proposed No Leasing area is some of the best intact habitat within the Newcastle Field Office.
A natural process or system	No	Although natural systems and processes occur on public lands, the sagebrush vegetation community and the various habitat requirements of Greater Sage-Grouse across its range are not comprised of plant species or communities as described in this criterion and were not highlighted as comprising a natural system.
Natural hazards	No	The public lands nominated as potential ACECs do not constitute a natural hazard as described in this criterion.
Importance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
More than locally significant qualities	Yes	The proposed No Leasing area has not been surveyed for sage-grouse leks and is believed to contain many leks that have not been identified. Radio collared grouse in the Newcastle Field Office have not been identified as migratory populations. The grouse in the proposed Raven Creek Special Management Area are most likely non-migratory populations. Grouse are planned to be collared in the spring of 2011 to determine migratory status and map seasonal habitat use.

Special qualities	Yes	The areas nominated as potential ACECs have the following qualities described under this criterion: fragile, sensitive, irreplaceable, and vulnerable to adverse change. The resource on a range-wide basis is not rare, exemplary, unique, or endangered or threatened (i.e. listed species).
Warrants national priority/FLPMA protection	No	Although conservation of Greater Sage-Grouse is of current national concern to the agency due to the warranted but precluded status in regard to listing by the USFWS, and initiation of the Greater Sage-Grouse planning strategy, the agency has been emphasizing Greater Sage-Grouse conservation since the late 1990s. In 2005, the BLM issued WO-IM-2005-024 directing that sage-grouse conservation measures be included into all RMPs within the range of the species by 2015. At this time there exist no secretarial or executive orders or public laws identifying Greater Sage-Grouse as a national priority for protection beyond management of the species habitat which falls within the purview of implementation of the ESA and FLPMA.
Safety/public welfare concerns	No	Qualities regarding safety and public welfare are not present within the areas nominated as potential ACECs for sage-grouse habitat.
Poses a significant threat	No	Areas nominated as potential ACECs for Greater Sage-Grouse habitat do not pose a significant threat to human life and safety or to property.

Map I-3. Proposed Newcastle Area of Critical Environmental Concern

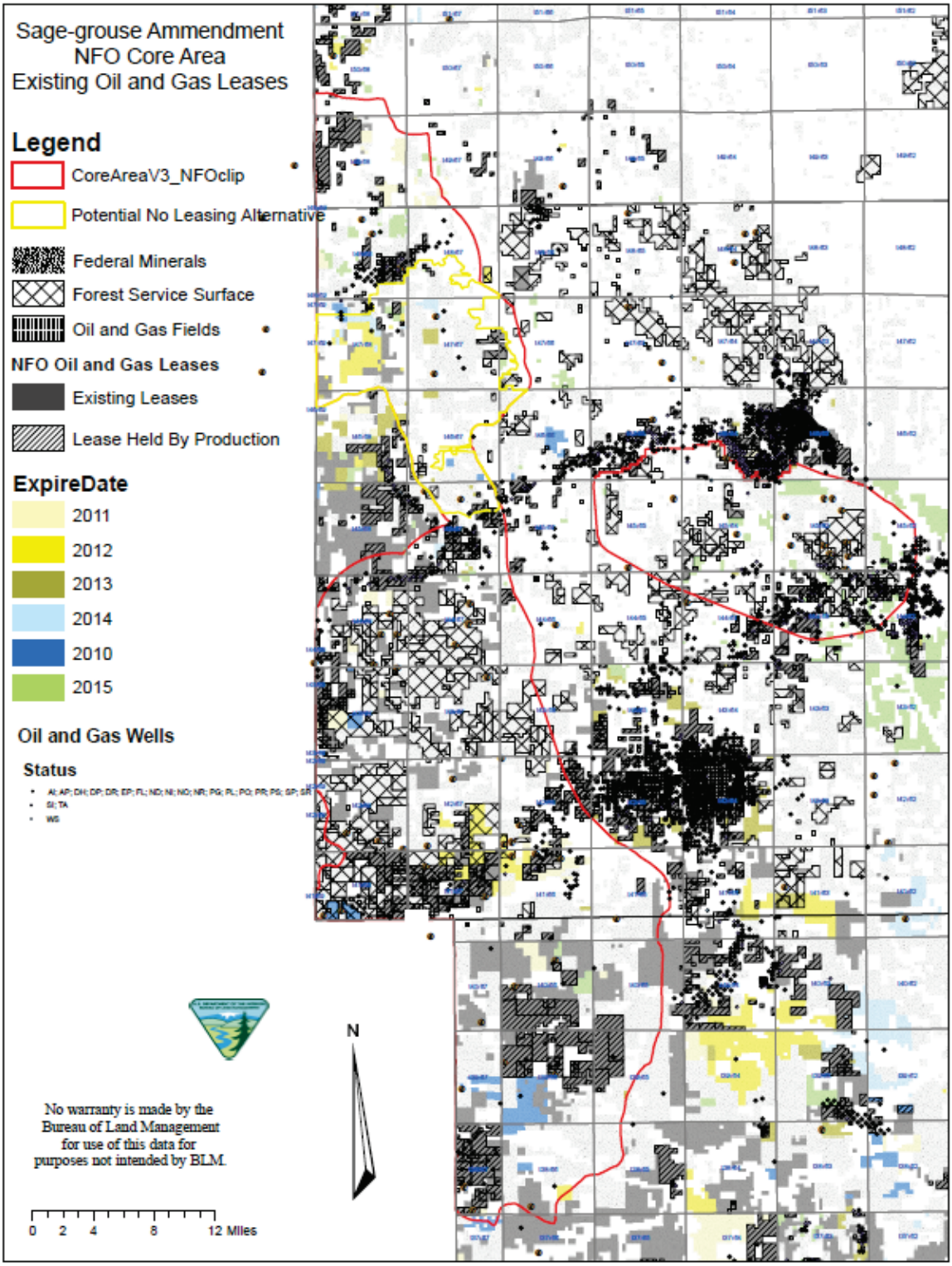
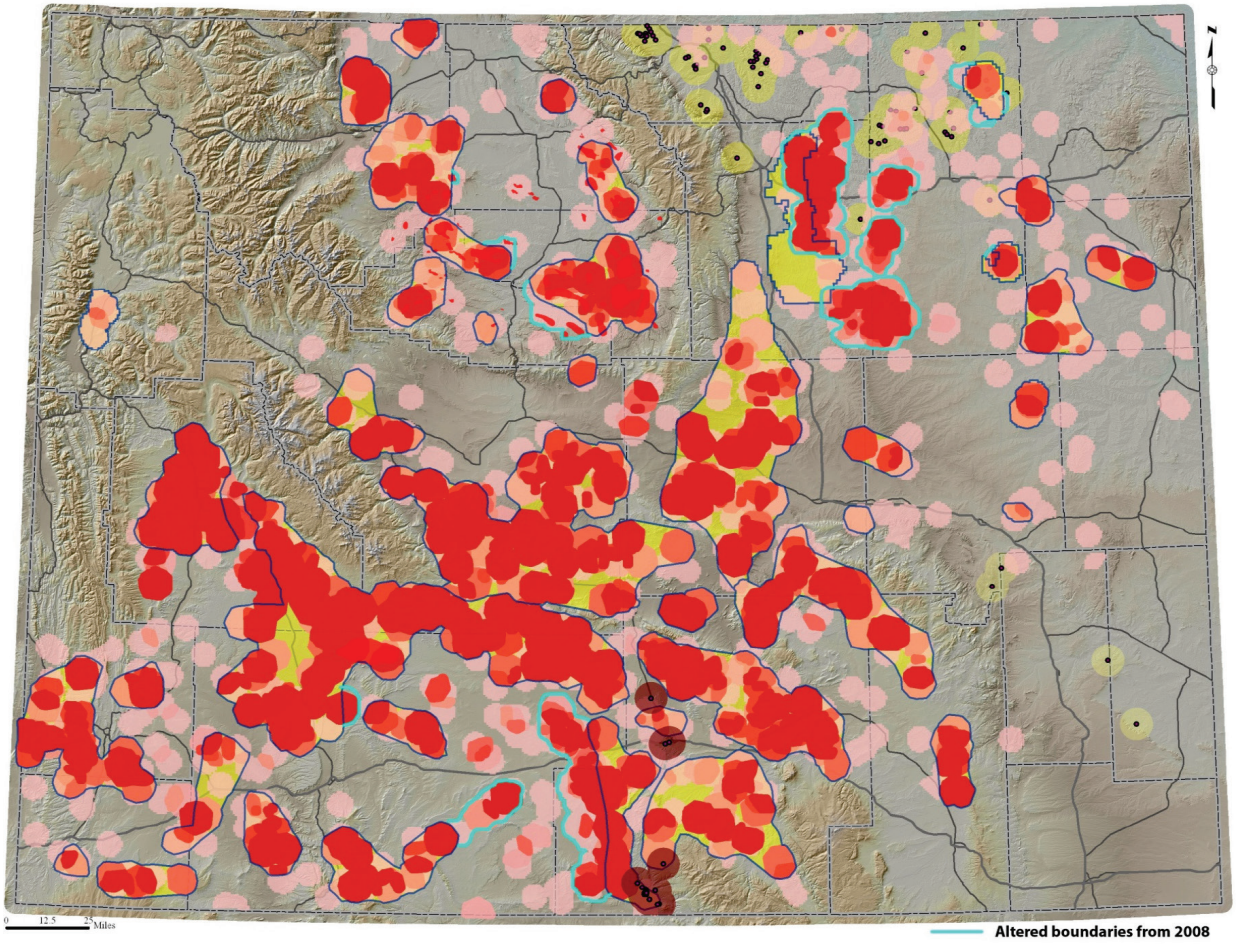


Table I-5. Greater Sage-Grouse General Habitat Relevance and Importance Evaluation

Area Considered:	Albany, Campbell, Carbon, Converse, Crook, Fremont, Goshen, Laramie, Lincoln, Natrona, Niobrara, Park, Platte, Sublette, Sweetwater, Teton, Uinta, and Weston Counties	
General Location:	Albany, Campbell, Carbon, Converse, Crook, Fremont, Goshen, Laramie, Lincoln, Natrona, Niobrara, Park, Platte, Sublette, Sweetwater, Teton, Uinta, and Weston Counties	
General Description:	General habitat areas for Greater Sage-Grouse in Wyoming.	
Acreage:	The total acreage of Greater Sage-Grouse general habitats on BLM/Forest Service administered lands is 23,848,198 acres. Of that total, 11.6 million acres are BLM/Forest Service surface administration and would constitute the Public Proposed Sage-grouse General Habitat ACEC.	
Values Considered:	Greater Sage-Grouse habitat.	
Relevance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
A significant historic, cultural, or scenic value	Yes	Although not the intent of the ACEC, due to its size and proposed restrictions on oil and gas and wind energy development especially, other sensitive resources would also benefit.
A fish and wildlife resource	Yes	Other than sage-grouse, the proposed ACEC area contains a mix of elk, mule deer, antelope, moose, winter, transition, parturition ranges and migration corridors, and elk feedgrounds; with some of the winter ranges in these key habitat areas being the terminuses of some of the longest intact migration routes in the lower 48 states. Sage-grouse brood rearing, nesting, winter concentration areas, and lek sites; pygmy rabbit habitats; sage-steppe songbirds nesting and brood-rearing occur throughout these primarily sage-steppe habitats.
A natural process or system	Yes	There are several areas of special status plant species within these sage-steppe key habitat areas, such as, the Trelease's milk-vetch, cedar-rim thistle and meadow pussytoes to name a few.
Natural hazards	No	There are no specifically identified natural hazards in the proposed sage-grouse general habitat areas. The area does contain rattlesnakes, stinging insects, roads in poor condition, etc. but at this scale and dealing with almost eleven million acres of BLM land, these hazards have not been specifically identified.
Importance Value	**Meets Value (Yes/No)**	**Rationale for Determination**
More than locally significant qualities	No	The proposed ACEC covers over six BLM Field Office Areas and three Forest Service Districts, and includes a large portion of the Wyoming Basin eco-region and its associated sagebrush-steppe vegetative community and Greater Sage-Grouse general habitat. It also includes smaller portions of the Greater Yellowstone ecosystem and the Great Plains/High Plains eco-region. The Wyoming Basin and its sage-steppe vegetative communities have been subject to intense fragmentation as oil and gas, coal, uranium, transmission lines, and other development has crossed these vegetative communities with roads, pipelines, wellpads, compressor stations, transmission lines, and other forms of development. It has been this cumulative buildup over time that has reduced habitat effectiveness to the point that the Greater Sage-Grouse has been identified as eligible for listing (but currently precluded) under the ESA.

		It is impossible to interpret the areas of protection based on the maps that were provided in the nomination.
Special qualities	No	Sage-steppe habitat conversion to agricultural operations and industrialization have limited the amount of suitable sage-grouse breeding, nesting, brood-rearing, and wintering habitats across Wyoming. In addition, continuous cycles of drought and competition for resources with domestic and wild ungulates have resulted in limitations and conflict for resources on the remaining habitats. The combination of general habitat negates the benefits of the added protection needed in core habitat and may inadvertently increase fragmentation of core habitat as the complexities of overlapping resource values and projects of national interest intersect.
Warrants national priority/FLPMA protection	No	These issues have been recognized by the above referenced TSA listing by USFWS, as well as by the BLM, which is undergoing an EIS amendment to incorporate greater management protections for sage-grouse and their core habitat areas throughout the Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs planning areas and the Bridger-Teton National Forest, the Medicine Bow National Forest, and the Thunder Basin National Grassland. The general habitat within the project area in most cases has intensive mineral development and is held by production. The added value of managing the ACEC would not be fully realized due to the valid existing rights encumbering these habitats, which is largely why these areas were not included in the general habitat as a core area strategy by the State of Wyoming.
Safety/public welfare concerns	No	Qualities regarding safety and public welfare are not present within the areas nominated as potential ACECs for sage-grouse habitat.
Poses a significant threat	No	Areas nominated as potential ACECs for Greater Sage-Grouse habitat do not pose a significant threat to human life and safety or to property.

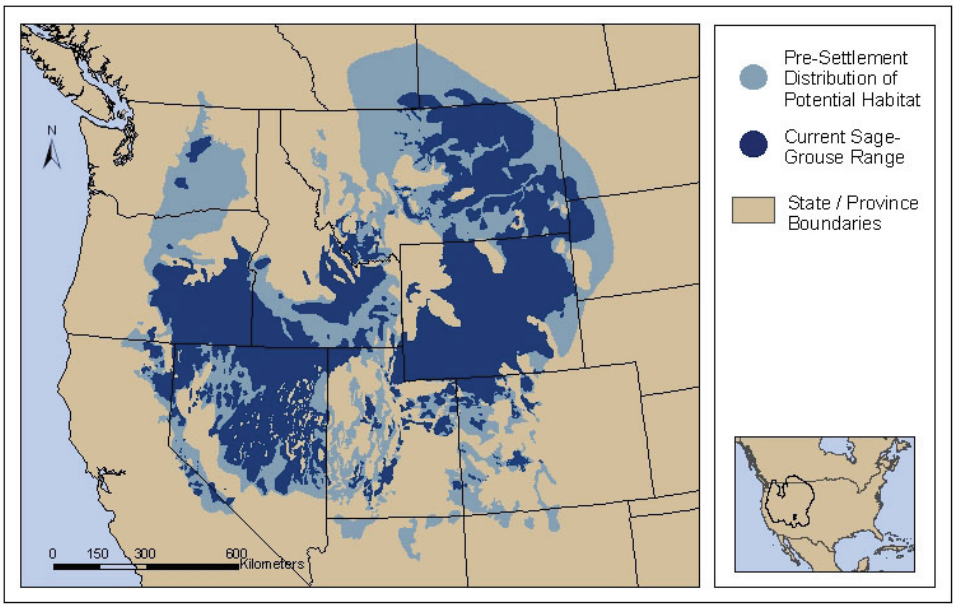
Map I-4. Proposed Greater Sage-Grouse General Habitat Area of Critical Environmental Concern



Background Information for All Nominations

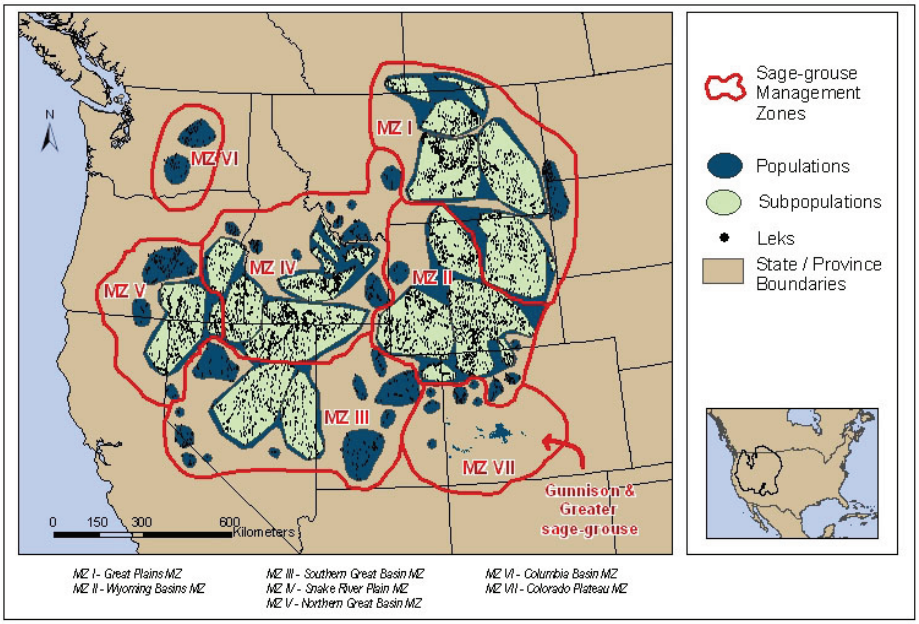
Greater Sage-Grouse are distributed throughout the western United States (**Figure I-1**). The portion of the distribution in Montana, Wyoming, North Dakota, South Dakota, Alberta, and Saskatchewan is designated as Management Zone I (**Figure I-2**) (Stiver et al. 2006). Management Zones are delineations of Greater Sage-Grouse populations and sub-populations within floristic zones with similar management issues.

Figure I-1. Greater Sage-Grouse Distribution



Source: Stiver et al. 2006

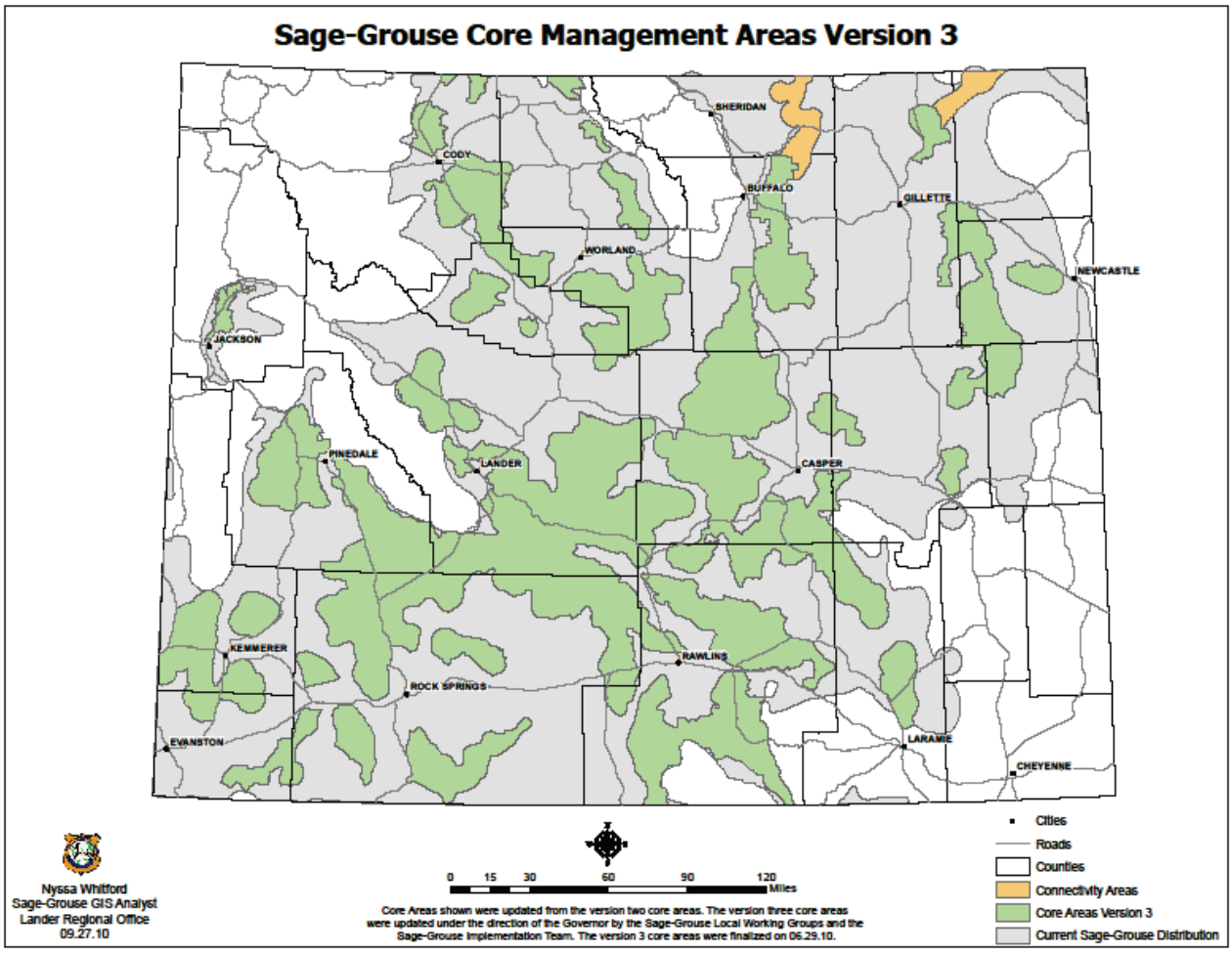
Figure I-2. Greater Sage-Grouse Management Zones



Source: Stiver et al. 2006

Within Management Zone I in Montana, Montana Fish, Wildlife, and Parks (MFWP) has designated core areas[6] (MFWP 2009) and WGFD has also designated core areas in Wyoming (**Figure I-3**) (WGFD 2009b).

Figure I-3. Greater Sage-Grouse Core Areas (Wyoming)



[6] Sage-grouse core areas are habitats associated with 1) Montana's highest densities of sage-grouse (25% quartile), based on male counts and/or 2) sage-grouse lek complexes and associated habitat important to sage-grouse distribution (MFWP 2009).

Appendix J – Disturbance Density Calculation Tool Manual

Information on the Disturbance Density Calculation Tool has been incorporated into Appendix D.

Appendix K – Biological Assessment and U.S. Fish and Wildlife Service Concurrence Letter

Biological Assessment

to analyze the effects of

Amending BLM and USFS Land Use Plans

To address:

Wyoming Greater Sage-Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement

16 March 2015
Revised May 20, 2015

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Biological Assessment

1.0 Introduction

This Biological Assessment (BA) analyzes the potential effects of changes to existing management identified in the selected alternative of the joint BLM/Forest Service - Wyoming Greater Sage-Grouse Proposed Land Use Plan Amendment and Final Environmental Impact Statement (Amendment), on threatened or endangered species listed or proposed for listing under the Federal Endangered Species Act (ESA) or on their designated critical habitat. Existing management conditions that would not be changed as a result of the Amendment will not be analyzed in this document.

In accordance with the ESA and regulatory guidance, we consider:

- Only those organisms that appear on the official species list as seen in Table 3, and
- Only those species under the regulatory jurisdiction of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).

We consider all listed and proposed species that may be present in the action area. We will also consider the effects of the proposed project on the primary constituent elements (PCEs) and/or physical and biological features (PBFs) of designated or proposed critical habitat that is likely to be affected by the proposed actions.

This document is prepared in accordance with the requirements of the ESA and its implementing regulations. It is also prepared in accordance with current Bureau of Land Management (BLM) policy following (IM No. 2012-044 and BLM Manual 6840) and US Forest Service (USFS) policy following standards established in Forest Service Manual direction (FSM 2670) and the guidance provided in the USFWS Consultation Handbook (U.S. Fish and Wildlife Service and National Marine Fisheries Service 1998). Additionally, this BA is prepared in collaboration with the USFWS as agreed upon under the Consultation Streamlining Guidance.

This analysis is based on the best scientific and commercial data available at the time this document was written. This includes information such as data collected from BLM and Forest databases, vegetation analyses, direct surveys in the field, the most recent and appropriate scientific research or species information, as well as direct observations by Biologists in the field.

This Biological Assessment (BA) analyzes the potential impacts on threatened and endangered plant, fish, and animal species that would result from the implementation of those management actions authorized under the Wyoming Greater Sage-Grouse Resource Management Plan/Land and Resource Management Plan (RMP/ LRMP)Amendments that would change, or are new and not part of existing management identified in current RMPs. Five potential alternatives are analyzed in the Environmental Impact Statement (EIS). This BA analyzes the Proposed Amended RMP/LRMP (Amendment).

Section 7(a) of the Endangered Species Act (ESA) requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and its designated critical habitat (if applicable). Regulations implementing this interagency cooperation provision of the ESA are codified at 50 CFR 402. Section 7 (a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the

continued existence of a listed species or adversely modify or destroy its designated critical habitat.

If a Federal action may "**adversely affect**" a listed species or its designated critical habitat, the responsible Federal agency must enter into formal consultation with the U.S. Fish & Wildlife Service (USFWS). In addition, under the 1994 Memorandum of Understanding (MOU) and the 2000 Memorandum of Agreement (MOA) among the BLM, U.S. Forest Service (USFS), USFWS, and National Marine Fisheries Service (NMFS), all four agencies agreed to promote the conservation of candidate species and streamline the Section 7 consultation and coordination process.

This BA conforms to the legal requirements set forth under Section 7 of the ESA, and was guided by the Regulations on Interagency Cooperation in 50 CFR 402.12 (f).

2.0 Project History

Greater Sage-Grouse (sage-grouse) have emerged as a significant conservation concern over the last 10 years. The species is currently a candidate for listing under the Endangered Species Act as "threatened", because of two primary factors: 1) the large-scale loss and fragmentation of habitats across the species range, and 2) a lack of regulatory mechanisms in place to ensure the conservation of the species. The primary threats to sage-grouse habitat are summarized in the listing decision. The two dominant threats are related to infrastructure associated with energy development in the eastern portion of the species range, and the conversion of sagebrush communities to annual grasslands associated with large uncharacteristic wildfires in the western portion of the species range.

The BLM and the USFS are working together to protect sage-grouse and their habitat by revising or amending 68 BLM Land Use Plans and 20 National Forest and Grassland Land and Resource Management Plans across nine western states, including Northeast California, Oregon, Nevada, Idaho, Montana, Utah, Wyoming, Northwest Colorado, South Dakota, and North Dakota. The BLM manages approximately half of the sage-grouse habitat, whereas the USFS manages approximately 8 percent of species habitat.

In 2011 and 2012, the United States Fish and Wildlife Service (FWS) submitted letters to the BLM and FS recommending that the agencies amend Land Use Plans to provide adequate regulatory mechanisms to conserve the species. The BLM and USFS are participating in six Environmental Impact Statements (EISs) to develop Records of Decision that will be used as a basis for amending Land Use Plans, including Forest Plans.

On December 9, 2011, a Notice of Intent was published in the Federal Register to initiate the BLM/USFS GRSG Planning Strategy across nine western states, including California, Oregon, Nevada, Idaho, Utah, and Southwest Montana in the Great Basin Region and Northwest Colorado, Wyoming, Montana, South Dakota, and North Dakota in the Rocky Mountain Region. The Wyoming RMP amendment/revision and draft EIS is one of fifteen separate EISs that are currently being conducted to analyze and incorporate specific conservation measures across the range of the GRSG, consistent with National BLM and USFS policy.

On December 27, 2011, the BLM Washington Office released Instruction Memorandum (IM) No. 2012-044, which directed all of the planning efforts across the GRSG range to consider all applicable conservation measures when revising or amending its RMPs in GRSG habitat, including the measures developed by the National Technical Team (NTT) that were presented in

their December 2011 document – A Report on National Greater Sage-Grouse Conservation Measures. IM-2012-044 directs all planning efforts associated with the national strategy to consider and analyze (as appropriate) the conservation measures presented in the report.

Along with the applicable measures that were outlined in the NTT Report, planning efforts associated with this National GRSG Planning Strategy will also analyze applicable conservation measures that were submitted to the BLM and USFS from various state governments and from citizens during the public scoping process.

The BLM and USFS are directed by the Federal Land Policy and Management Act of 1976 (FLPMA) to plan for and manage "public lands." As defined by the Act, public lands are those federally owned lands, and any interest in lands (e.g., federally owned mineral estate), that are administered by BLM/USFS.

The process for developing, approving, maintaining, and amending or revising RMPs/LRMPs was initiated under the authority of FLPMA Section 202(f). BLM's regulations under 43 CFR §1610 require BLM to use NEPA processes in preparing the plan so that the plan selected is based on informed decision making and public involvement. The 1976 National Forest Management Act (NFMA), Forest Service Manual (FSM) 1950, 1920 and Forest Service Handbook (FSH) 1909.15 direct the USFS in implementing NEPA into their planning processes. The process is guided by BLM planning regulations in 43 CFR §1600 and the Council on Environmental Quality (CEQ) regulations in 40 CFR §1500.

The pre-planning phase of the BLM and USFS planning process consists of (1) compiling and reviewing the current laws, regulations, policies, executive orders (EO), and directives pertaining to the planning area and (2) developing any needed State Director's/Regional Forester's guidance specific to the process and planning effort for the planning area.

Consultation/Conferencing History: The Bureau of Land Management (BLM) Wyoming State Office and the U.S. Forest Service (USFS) have initiated a planning effort to prepare Resource Management Plan (RMP) and Land and Resource Management Plan (LRMP) amendments with an associated environmental impact statement (EIS) for the Casper, Green River, Kemmerer, Newcastle, Pinedale, and Rawlins RMPs; and the Bridger-Teton National Forest (BTNF), Medicine Bow National Forest (MBNF), and Thunder Basin National Grassland (TBNG) LRMPs.

BLM and USFS land use plans and amendments must be consistent with officially approved or adopted resource- related plans, and the policies and programs contained therein, of other federal agencies, state and local governments, and Native American tribes, so long as the guidance and RMPs are also consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands, including federal and state pollution control laws as implemented by applicable federal and state air, water, noise, and other pollution standards or implementation plans.

3.0 Purpose and Need

The purpose of this Land Use Plan (LUP) Amendment for the sage-grouse is to identify and incorporate appropriate conservation measures to protect, enhance, and/or restore sage-grouse habitat by reducing, eliminating, or minimizing threats to their habitat. The need to create this amendment arose when the inadequacy of regulatory mechanisms was identified as a significant threat in the USFWS finding on the petition to list the sage-grouse. The USFWS identified

conservation measures within BLM and USFS LUPs as the principal regulatory mechanisms for habitat conservation. Therefore, this amendment will focus on areas affected by threats to sage-grouse habitat identified by the USFWS in the March 2010 listing decision (USFWS 2010a).

4.0 Analysis Area

The Bureau of Land Management (BLM) Wyoming State Office and the U.S. Forest Service (USFS) have initiated a planning effort to prepare Resource Management Plan (RMP) and Land and Resource Management Plan (LRMP) amendments with an associated environmental impact statement (EIS) for the Casper, Green River, Kemmerer, Newcastle, Pinedale, and Rawlins RMPs; and the Bridger-Teton National Forest (BTNF), Medicine Bow National Forest (MBNF), and Thunder Basin National Grassland (TBNG) LRMPs.

The planning area for the sage-grouse RMP and LRMP Amendments comprise the Wyoming BLM Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices, and the USFS BTNF, MBNF, and TBNG Planning Units and includes all public lands and federal mineral estate managed by the BLM and the USFS within these areas. The planning area encompasses approximately 16 million acres of public surface land administered by the BLM and USFS, and approximately 23 million acres of federal mineral estate in Albany, Campbell, Carbon, Converse, Crook, Fremont, Goshen, Laramie, Lincoln, Natrona, Niobrara, Platte, Sublette, Sweetwater, Teton, Uinta, and Weston counties in Wyoming. Of the 23 million acres of federal mineral estate, approximately 7 million acres are split estate. Table 1 provides a summary of land and mineral ownership and administrative jurisdictions within the planning area.

Map 1- Planning Area

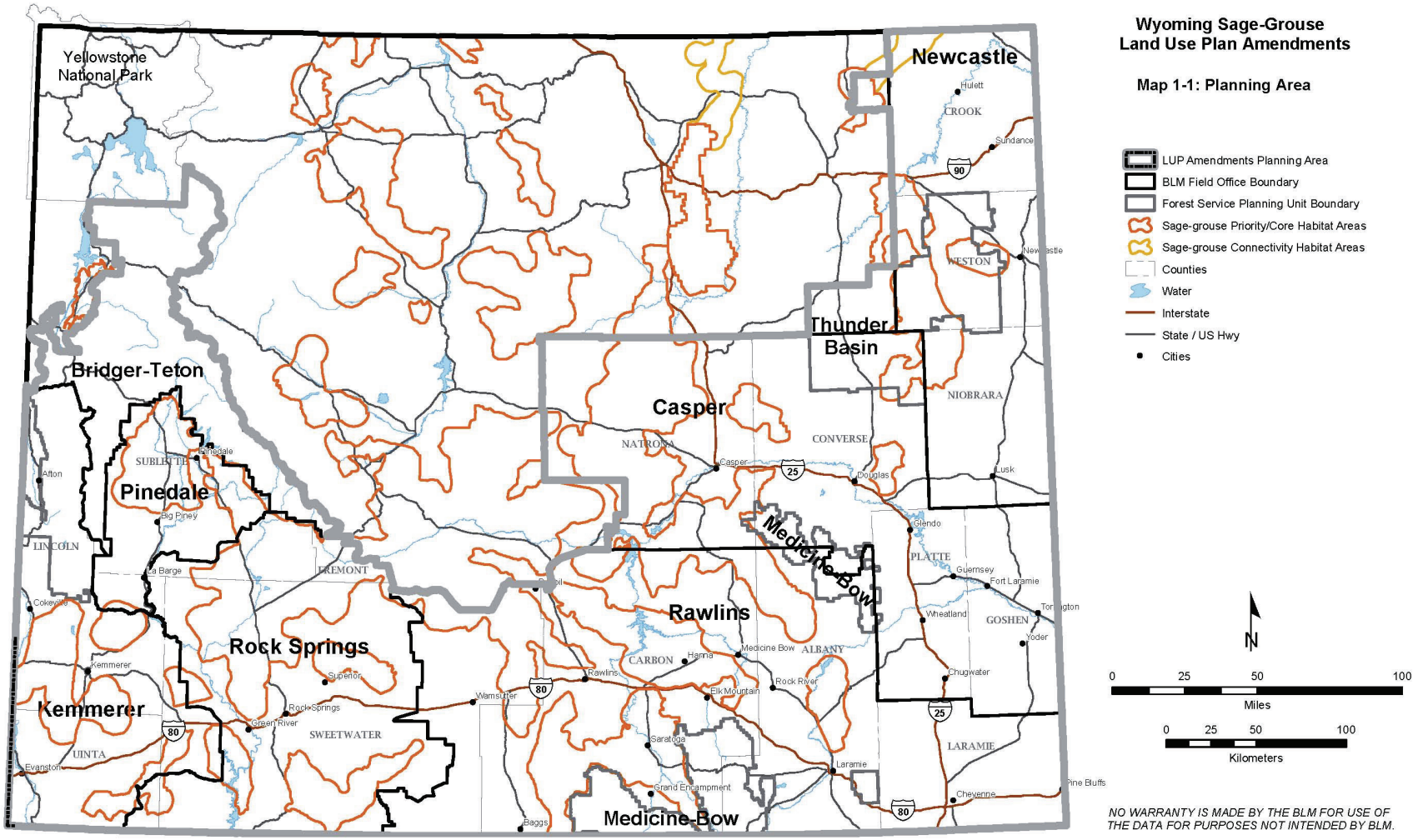


Table 1-Land and Mineral Ownership and Administrative Jurisdictions within the Planning Area

Jurisdiction	Acres
Total land surface area in the planning area (all ownership)	38,854,719
Areas the Wyoming Sage-Grouse RMP/LRMP Amendments decisions will cover:	
Federal land/federal minerals	15,887,984
Federal land/nonfederal minerals	364,585
Nonfederal land/federal minerals	6,443,758
Total BLM/USFS-administered federal land surface to be covered by RMP/LRMP decisions	**16,249,869**
Total BLM/USFS-administered federal mineral estate to be covered by RMP/LRMP decisions	**22,964,444**
Areas the Wyoming Sage-Grouse RMP/LRMP Amendments decisions will *not* cover:	
Private or state land/private or state minerals	15,325,765

For purposes of this document, the following will be used to describe the types of habitat discussed:

- General Habitat Management Area (GHMA): Is occupied (seasonal or year-round) habitat outside of priority habitat. These areas have been identified by the BLM/Forest Service in coordination with respective state wildlife agencies.

- Priority Habitat Management Area (PHMA): Sage-grouse priority habitats are areas that have the highest conservation value to maintaining or increasing Sage-grouse populations. These areas would include breeding, late brood-rearing, winter concentration areas, and where known, migration or connectivity corridors. Sage-grouse Priority Habitat Management Area includes core plus connectivity habitat, unless specifically identified as containing only one (i.e., PHMA (core only)).

- Sagebrush Focal Area: Areas identified by the FWS that that represent recognized "strongholds" for GRSG that have been noted and referenced by the conservation community as having the highest densities of GRSG and other criteria important for the persistence of GRSG. Sagebrush Focal Areas are wholly contained within PHMA, and are assumed to have the same management actions applied, unless otherwise specified.

5.0 Description of Changes to Existing Management identified in the Proposed Land Use Plan Amendments

As part of the Land Use Plan Amendment, BLM and the Forest Service identified management actions to manage sage-grouse habitat on federally managed lands. Table 2 (below) identifies new management actions or changes to existing management that are being consulted on in this BA. BLM and Forest Service have different policies and language/wording requirements, which creates the need for separate actions/standards/guidelines.

Table 2. Management Actions for the BLM and USFS Proposed LUP Amendments.

#	Alternative E (Proposed LUP Amendment)	
	BLM	**Forest Service**
	General Management Direction for Action Alternatives	
5	The BLM/Forest Service will coordinate new recommendations, mitigation, and conservation measures applied for sage-grouse with the WGFD and other appropriate agencies, local government cooperators, and the Wyoming SGIT. These measures will be analyzed in site-specific NEPA documents, as necessary.	
6	Apply appropriate seasonal restrictions for implementing vegetation management treatments according to the type of seasonal habitats present in a priority area. Vegetation treatments must include monitoring to determine achievement of objectives and their long-term success.	See **GRSG-TDDD-ST-003-Standard, GRSG-TDDD-ST-004-Standard, GRSG-TDDD-ST-005-Standard, GRSG-TDDD-ST-006-Standard,** and **GRSG-TDDD-ST-007-Standard** at MA #131 through #134 for seasonal restrictions. See **GRSG-GRSGH-ST-001-Standard** at MA #99 for monitoring direction.
7	Ensure site-specific, measurable, conservation and mitigation objectives are included in project planning within sage-grouse habitats.	
8	Each BLM field office will develop landscape-scale restoration, conservation, and maintenance strategies, including special management of seasonal habitats and identified connectivity zones outside of PHMA, working with voluntary partners and cooperating agencies. These strategies must be coordinated and reconciled, where possible, with adjoining management entities that share habitats or populations.	These LUP amendments are landscape-scale restoration, conservation, and maintenance strategies for greater sage-grouse habitat. Management of National Forest System lands will be coordinated and reconciled, where possible, with adjoining management entities that share habitats or populations.
9	Design all range projects in a manner that minimizes potential for invasive species establishment. Monitor and treat invasive species associated with existing range improvements.	**GRSG-GRSGH-GL-004-Guideline** – In priority and general habitat management areas and sagebrush focal areas, actions and authorizations should be designed to limit the spread and effect of undesirable non-native plant species.
10	Apply all appropriate required design features (Appendix B) as mandatory Stipulations/Conditions of Approval (COAs) within PHMAs for fluid minerals, travel management, lands and realty, range management, wild horses and burro, coal exploration, locatable minerals, West Nile Virus, mineral materials, non-energy solid leasable minerals, vegetation management, fire and fuels management, and noise.	Required design features displayed in Appendix B that are not current standard operating procedure have been converted to standards or guidelines for the Forest Service draft proposed plan amendments. Those items that were not converted will be displayed in implementation guidance distributed after the project decision is finalized. **GRSG-INFRA-GL-001-Guideline** - In priority habitat management areas and sagebrush focal areas, impacts to greater sage-grouse and their habitats should be reduced during maintenance, replacement, and upgrades of existing structures. Impacts should also be mitigated when constructing new infrastructure. • Existing guy wires should be removed or appropriately marked with bird flight diverters to make them more visible to greater sage-grouse in flight. Authorization of new infrastructure with guy wires should be restricted. • Power lines (distribution and transmission) should be designed to minimize wildlife related impacts and constructed to the latest APLIC standards. • When possible, perch deterrents should be installed on existing and new overhead facilities. Tanks and other above ground facilities should be equipped with structures or devices that discourage nesting and perching of raptors and corvids. • Permanent structures should be designed or sited to minimize impacts to greater sage-grouse, with emphasis on locating and operating facilities that create movement (e.g., pump jacks) or attract frequent human use and vehicular traffic (e.g., fluid

		storage tanks) in a manner that will minimize disturbance of greater sage-grouse or interference with habitat use. • Liquid gathering facilities should be placed outside priority habitat management areas and sagebrush focal areas. To reduce truck traffic and perching and nesting of ravens and raptors, tanks should not be placed at well locations. **GRSG-LG-GL-006-Guideline** – Collision risk should be mitigated through design features or markings (e.g., mark, laydown fences, location and design) when fences are constructed or reconstructed within priority-PHMAs and sagebrush focal areas and within 4 miles of occupied leks in priority-connectivity management areas. **GRSG-M-FML-ST-003-Standard –**Locate compressor stations on portions of a lease that are non-habitat and are not used by greater sage-grouse, and if there would be no direct, indirect, or cumulative effects on greater sage-grouse or their habitat. If this is not possible, work with the operator to use mufflers, sound insulation, or other features to reduce noise. **GRSG-M-FMO-GL-001-Guideline –**Employee camps should not be authorized in priority habitat management areas and sagebrush focal areas. **GRSG-M-FMO-GL-002-Guideline –** In priority habitat management areas and sagebrush focal areas, closed-loop systems should be used for drilling operations with no reserve pits, where feasible. **GRSG-M-FMO-GL-003-Guideline –** In priority and general habitat management areas and sagebrush focal areas, during drilling operations, soil compaction should be reduced and soil structure should be maintained using the best available techniques to improve vegetation reestablishment. **GRSG-M-FMO-GL-004-Guideline –** In priority and general habitat management areas and sagebrush focal areas, dams, impoundments and ponds for mineral development should be constructed to reduce potential for West Nile virus. Examples of methods to accomplish this include: • Increase the depth of ponds to accommodate a greater volume of water than is discharged. • Build steep shorelines (greater than 2 feet) to reduce shallow water and aquatic vegetation around the perimeter of impoundments to reduce breeding habitat for mosquitoes. • Maintain the water level below that of rooted aquatic and upland vegetation. Avoid flooding terrestrial vegetation in flat terrain or low-lying areas. • Construct dams or impoundments that restrict down-slope seepage or overflow by digging ponds in flat areas rather than damming natural draws for effluent water storage or lining constructed ponds in areas where seepage is anticipated. • Line the channel where discharge water flows into the pond with crushed rock or use a horizontal pipe to discharge inflow directly into existing open water. • Line the overflow spillway with crushed rock and construct the spillway with steep sides. • Fence pond sites to restrict access by livestock and other wild ungulates. • Remove or re-inject produced water. • Treat waters with larvicides to reduce mosquito production where water occurs on the surface.

		GRSG-RT-ST-005-Standard – In priority and general habitat management areas and sagebrush focal areas, do not allow public access on temporary energy development roads, unless consistent with all other terms and conditions included in this land use management plan amendment. **GRSG-RT-GL-001-Guideline** – In priority and general habitat management areas and sagebrush focal areas, new roads and road realignments should be designed and administered to reduce collisions with greater sage-grouse. **GRSG-RT-GL-002-Guideline** – In priority and general habitat management areas and sagebrush focal areas, road construction within riparian areas and mesic meadows should be restricted. If not possible to restrict construction within riparian areas and mesic meadows, roads should be designed and constructed perpendicular to ephemeral drainages and stream crossings, unless topography prevents doing so. **GRSG-RT-GL-004-Guideline –** In priority and general habitat management areas and sagebrush focal areas, dust abatement terms and conditions should be included in road use permits when dust has the potential to impact greater sage-grouse. **GRSG-RT-GL-005-Guideline -** In priority and general habitat management areas and sagebrush focal areas, road and road-way maintenance activities should be designed and implemented to reduce the risk of vehicle or human-caused wildfires and the spread of invasive plants. Such activities include but are not limited to the removal or mowing of vegetation a car-width off the edge of roads; use of weed-free earth-moving equipment, gravel, fill, or other materials; and blading or pulling roadsides and ditches that are infested with noxious weeds only if required for public safety or protection of the roadway. **GRSG-GRSGH-GL-005-Guideline -** To facilitate safe and effective fire management actions, in priority and general habitat management areas and sagebrush focal areas, fuels treatments should be designed to reduce the spread and intensity of wildfire in high-risk areas (i.e., areas of increased potential for ignition and in areas where there is a potential for wildfire that would be difficult for suppression resources to contain and control). **GRSG-FM-GL-002-Guideline –** Locating temporary wildfire suppression facilities (e.g., incident command posts, spike camps, helibases, mobile retardant plants) in priority and general habitat management areas and sagebrush focal areas should be restricted. Methods to restrict impacts include location in existing disturbed areas, grasslands, near roads/trails or other areas where there is existing disturbance or minimal sagebrush cover. **GRSG-FM-GL-003-Guideline** - In priority and general habitat management areas and sagebrush focal areas, cross-country vehicle travel during fire operations should be restricted whenever safe and practical to do so, as determined by fireline leadership, incident commanders, etc. **GRSG-FM-GL-004-Guideline** – In priority and general habitat management areas and sagebrush focal areas, burnout operation areas should be restricted by constructing direct fire lines, whenever safe and practical to do so, to improve effectiveness and minimize loss of existing sagebrush habitat as determined by fireline leadership, incident commanders, etc.. **GRSG-FM-GL-005-Guideline** – In priority and general habitat management areas and sagebrush focal areas, fire management prescriptions should minimize undesirable effects on vegetation

		and/or soils (e.g., minimize mortality of desirable perennial plant species and reduce risk of hydrophobicity). **GRSG-FM-GL-006-Guideline -** In priority and general habitat management areas and sagebrush focal areas, roads and natural fuel breaks should be incorporated into fuel break design to improve effectiveness and minimize loss of existing sagebrush habitat. **GRSG-FM-GL-007-Guideline -** In priority and general habitat management areas and sagebrush focal areas, all fire-associated vehicles and equipment should be power-washed before entering and exiting the area to minimize the introduction of undesirable invasive plant species. **GRSG-FM-GL-008-Guideline** - Unit-specific greater sage-grouse fire management toolboxes containing maps, lists, contact information for qualified resource advisors, local guidance, and relevant information should be developed. **GRSG-FM-GL-009-Guideline** – Localized maps of priority and general habitat management areas and sagebrush focal areas should be provided to dispatch officers and extended attack incident commanders to use when prioritizing wildfire suppression resources and designing suppression tactics. **GRSG-FM-GL-010-Guideline** - In or near priority and general habitat management areas and sagebrush focal areas, a greater sage-grouse resource advisor should be assigned to all extended attack fires. **GRSG-FM-GL-011-Guideline** – On critical fire weather days, additional fire suppression resources should be pre-positioned to optimize a quick and efficient response into priority and general habitat management areas and sagebrush focal areas. **GRSG-FM-GL-012-Guideline** - During periods of multiple fires, line officers should be involved in setting priorities to help protect priority and general habitat management areas and sagebrush focal areas. **GRSG-FM-GL-013-Guideline** – In priority and general habitat management areas and sagebrush focal areas, consider using fire retardant and mechanized equipment only if it is likely to result in minimizing burned acreage. **GRSG-FM-GL-014-Guideline** – In priority and general habitat management areas and sagebrush focal areas, mop-up should be conducted where the burned areas adjoin unburned islands, doglegs, or other habitat features, as safety and available resources allows.
11	Integrated vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species per BLM Handbook H-1740-2. Manage weed treatments to maintain and improve greater sage-grouse habitat. Apply Required Design Features and BMPs as Conditions of Approval, such as those in Appendix B.	Integrated vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species per Forest Service Manual 2080. Manage weed treatments to maintain and improve Greater Sage-Grouse habitat.
13	As new occupied sage-grouse habitat is found or occurs either through additional inventories or expansion into previously unoccupied habitat, the BLM will incorporate, through appropriate processes and analyses, these areas into the GHMA sage-grouse habitat category and manage them as such, until the earliest review occurs by the SGIT. At that time they will be considered for PHMA status or continue to be managed as GHMA habitat, and will be added to the statewide map at that time.	As new occupied sage-grouse habitat is found or occurs either through additional inventories or expansion into previously unoccupied habitat, the Forest Service will incorporate these areas into priority and general habitat management areas and sagebrush focal areas through appropriate processes and analyses.
14	Contribute to actions that help to ground-truth the statewide sage-grouse seasonal habitat models for the State of Wyoming.	

15	Use the Sage-grouse Habitat Assessment Framework or best available assessment tool (approved by the AO/Responsible Official) when assessing or evaluating sage-grouse habitats at multiple scales.	
17	Many sage-grouse seasonal habitats within and outside of PHMA are encumbered by valid existing rights, such as mineral leases or existing rights-of-way. Fluid mineral leases often will include less stringent lease stipulations than the timing, distance, and density requirements identified for consideration in this plan. The BLM will work with proponents holding valid existing leases that include less stringent lease stipulations than the timing, distance, and density restrictions described within this plan to ensure that measurable sage-grouse conservation objectives (such as, but not limited to, consolidation of infrastructure to reduce habitat fragmentation and loss, and effective conservation of seasonal habitats and habitat connectivity to support management objectives set by the WGFD) are included in all project proposals.	**GRSG-M-FML-GL-002-Guideline** – On existing federal leases in priority and general habitat management areas and sagebrush focal areas, when surface occupancy cannot be restricted due to valid existing rights or development requirements, disturbance and surface occupancy should be limited to areas least harmful to greater sage-grouse, based on vegetation, topography, or other habitat features.
18	Areas within PHMA would be limited to designated roads, primitive roads, and trails. Individual route designations will occur during subsequent implementation level travel management planning. Until implementation level travel management plans and route designations are complete, motorized travel will be limited to existing roads, and trails.	Motorized travel on National Forest System lands is limited to designated roads and trails.
19	Complete activity-level travel plans within five years of the ROD for this planning effort. During activity level planning, where appropriate, designate routes in PHMA with current administrative/agency purpose or need to administrative access only. Existing plans should be assessed for consistency with sage-grouse conservation objectives.	Motorized travel plans have been completed for National Forest System Lands. Existing plans will be assessed periodically for consistency with greater sage-grouse habitat needs.
20	Construct roads needed for production activities to minimum design standards within PHMAs, in compliance with the Density and Disturbance Calculation Tool (DDCT) process.	
21	Field Office and Ranger District staff will work with project proponents (including those within the BLM/Forest Service) and the WGFD to site their projects in locations that meet the purpose and need for their project, but have been determined to contain the least sensitive habitats.	
22	Evaluate opportunities to coordinate management plans and strategies on multiple allotments where coordination under a single management plan/strategy would result in enhancing Greater Sage-Grouse populations or its habitat, as determined in coordination with the state wildlife agency and with project proponents, partners, and stakeholders.	
25	All existing LUP decisions will be retained unless vacated or modified by decisions in these LUP amendments. Where more restrictive land use allocations or decisions are made in existing RMPs, those more restrictive land use allocations or decisions will remain in effect and will not be amended by these LUP amendments.	
26	Fire and fuels management would contribute to the protection and enhancement of sagebrush habitat that support Greater Sage-Grouse populations (including large contiguous blocks of sagebrush).	See GRSG-FM-GL-001-Guideline at MA #114.
27	BLM planning units (Districts), in coordination with the USFWS and relevant state agencies, would complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive Species Habitat Assessments to prioritize at-risk habitats, and identify fuels management, preparedness, suppression and restoration priorities necessary to maintain sagebrush habitat to support interconnecting Greater Sage-Grouse populations. These assessments and subsequent assessment updates would also be a coordinated effort with an interdisciplinary team to take into account other Greater Sage-Grouse priorities identified in this plan. Appendix J describes a minimal framework example and suggested approach for this assessment. Implementation actions will be tiered to the Local (District) Greater Sage-Grouse Landscape Wildfire & Invasive Species Assessment using the best available science related to the conservation of Greater Sage-Grouse. In coordination with USFWS and relevant state agencies, the BLM planning units (Districts) will identify annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments. Annual treatment needs will be coordinated across state/regional scales and across jurisdictional boundaries for long-term conservation of Greater Sage-Grouse.	

	These landscape assessment implementation efforts will be reviewed annually with appropriate USFWS and state agency personnel.	
28	Implement a coordinated inter-agency approach to fire restrictions based upon National Fire Danger Rating System (NFDRS) thresholds (fuel conditions, drought conditions, and predicted weather patterns) for Greater Sage-Grouse habitat.	
29	Within acceptable risk levels, utilize a full range of fire management strategies and tactics, including the management of wildfires to achieve resource objectives across the range of sage-grouse habitat consistent with land use plan direction.	
29a	In order to avoid surface-disturbing activities in PHMA, priority will be given to development of oil and gas and other mineral resources outside of PHMA, subject to applicable stipulations. When authorizing development of oil and gas and other mineral resources in PHMA, subject to applicable stipulations for the conservation of Greater Sage-Grouse, priority will be given to development in non-habitat areas first and then in the least suitable habitat for Greater Sage-Grouse.	**GRSG-M-FMUL-GL-001-Guideline** – In priority and general habitat management areas, when analyzing leasing of fluid mineral resources, prioritize development in non-habitat areas first and then in the least suitable habitat for greater sage-grouse, subject to valid existing rights, law, and regulations.
139	Designate Sagebrush Focal Areas (SFA) as shown on Map 2-36 (1,915,989 acres). SFAs will be managed as PHMA, with the following additional management: 1) Recommended for withdrawal from the General Mining Act of 1872, subject to valid existing rights, the lands shown in Map 2-23 (252,161 acres). 2) Prioritized for management and conservation actions in these areas, including, but not limited to review of livestock grazing permits/leases (see livestock grazing section for additional actions).	
	Lands and Realty Management	
	Rights-of-Way (e.g., Power lines, Transmission, Wind Energy Projects)	
30	Sage-grouse PHMA would be managed as ROW avoidance areas for new ROW or SUA permits (Map 2-13).	**GRSG-LR-SUA-ST-001-Standard** – In priority habitat management areas and sagebrush focal areas, restrict issuance of new special use authorizations for infrastructure, such as high-voltage transmission lines, major pipelines hydropower, distribution lines, and cellular towers (Map 2-13). Exceptions must be limited and based on rationale (e.g., monitoring, modeling, or best available science) that explicitly demonstrates that adverse impacts to greater sage-grouse will be avoided with the exception.
30a	No similar action	**GRSG-LR-SUA-ST-002-Standard –** In priority and general habitat management areas and sagebrush focal areas, do not authorize temporary lands special use permits (i.e., facilities or activities) that result in loss of habitat or would have long-term (i.e., greater than five years) negative impact on greater sage-grouse or their habitats.
31	Within GHMA where new ROWs/SUAs are necessary, new ROWs/SUAs would be co-located within existing ROWs/SUAs where technically feasible. Appropriate sage-grouse seasonal timing constraints would be applied.	**GRSG-LR-SUA-ST-006-Standard** – In priority and general habitat management areas and sagebrush focal areas, locate upgrades to existing transmission lines within the existing designated corridors unless an alternate route would benefit greater sage-grouse or their habitats.
32	**Sage-grouse PHMA:** New transmission projects would be allowed only 1) within the 2-mile wide transmission line route through sage-grouse PHMA (core only) population areas in south-central and southwestern Wyoming (see Map 2-15 from EO 2011-5); 2) when co-located with an existing 115 kilovolt or greater powerline, as close as technically feasible, not to exceed 0.5 miles or within a designated corridor authorized for overhead powerlines. Projects in designated corridors and along these routes will not be counted against the 5% disturbance cap (Wyoming Density and Disturbance Calculation Tool Manual). New transmission projects proposed outside of these areas would be considered where it can be demonstrated that declines in sage-	**GRSG-LR-SUA-ST-004-Standard** – In priority habitat management areas and sagebrush focal areas, new power transmission projects must be located within the 2-mile wide transmission line route in south-central and southwestern Wyoming (see Map 2-15) or as close as technically feasible (within 0.5 mile) on either side of existing 115 kV or larger transmission lines or corridors (creating a route no wider than 1 mile). These projects will not be counted against the 5% disturbance cap (Wyoming Density and Disturbance Calculation Tool Manual). **GRSG-LR-SUA-ST-005-Standard** - In priority habitat management areas and sagebrush focal areas, new power distribution lines must not be located within 0.6 miles from the perimeter of occupied greater sage-grouse leks. Effective mitigation to protect greater sage-grouse is required.

	grouse populations could be avoided through project design and/or mitigation. In conducting review of power line transmission proposals, the use of the Framework for Sage-grouse Impacts Analysis for Interstate Transmission Lines or other appropriate documents are necessary. These transmission and distributions lines should be sited to minimize any potential impact on sage-grouse or their habitats, and must consider siting along or adjacent to existing long-term linear disturbance features whenever possible (i.e., along existing occupied above ground utilities, roads). New projects within sage-grouse PHMA that may require future distribution and transmission lines would include the proposed distribution and transmission lines in their DDCT as part of the proposed disturbance. Lines permitted but not located in the above mentioned routes or a designated corridor will be counted towards the 5% disturbance calculation (line disturbance is equal to ROW width multiplied by length and includes all access roads, staging areas, and other surface disturbance associated with construction outside of the ROW). New Distribution Lines: New electric distribution lines would be buried where feasible. If not feasible, distribution lines may be authorized when effectively mitigated to protect greater sage-grouse and the Authorized Officer determines that overhead installation is the action alternative with the fewest adverse impacts. Agricultural and residential lines will be considered to be adequately mitigated for greater sage-grouse if constructed at least 0.6 mile from the lek perimeter with appropriate timing constraints and constructed to the latest APLIC standards. These ROW authorizations will be subject to approval by the State Director. PHMAs are designated as avoidance areas for high voltage transmission line ROWs, except for the transmission projects specifically identified below. All authorizations in these areas, other than the excepted projects, must comply with the conservation measures outlined in this proposed plan, including the RDFs and avoidance criteria presented in Appendix B of this document. The BLM is currently processing an application for Gateway South and the NEPA review for this project is well underway. The BLM is analyzing Greater Sage-Grouse mitigation measures through the project's NEPA review process.	See all Standards and Guidelines in the Timing, Distance, Density, and Disturbance section and see **GRSG-INFRA-GL-001-Guideline.** **GRSG-LR-SUA-GL-002-Guideline** – In priority habitat management areas and sagebrush focal areas, outside of existing designated corridors, new transmission lines and pipelines should be buried to limit disturbance to the smallest footprint unless explicit rationale is provided that the biological impacts to greater sage-grouse are being avoided. When new transmission lines and pipelines are not buried, locate them adjacent to existing transmission lines and pipelines.
34	Maintenance/replacement of existing structures would be allowed subject to valid and existing rights. Upgrades would be considered, subject to mandatory Required Design Features (RDF) (Appendix B). Existing guy wires should be removed or appropriately marked with bird flight diverters to make them more visible to sage-grouse in flight. Powerlines (distribution and transmission) will be designed to minimize wildlife related impacts and constructed to the latest APLIC standards.	See **GRSG-INFRA-GL-001-Guideline** at MA #10.
35	Where existing authorizations, ROWs, or SUAs have had some level of development (e.g., road, fence, and well) and are expired and are no longer in use, the site would be reclaimed by removing these features and restoring the habitat. Powerlines (distribution and transmission) will be designed to minimize wildlife related impacts and constructed to the latest APLIC standards.	**GRSG-LR-SUA-ST-003-Standard -** In priority and general habitat management areas and sagebrush focal areas, when a lands special use authorization is revoked or terminated and no future use is contemplated, the authorization holder must remove overhead lines and other infrastructure in compliance with 36 CFR 251.60(i).
	Renewable Energy	

36	Wind energy development would be avoided in sage-grouse PHMA (Map 2-33), and not allowed unless it can be sufficiently demonstrated that the development activity would not result in declines of sage-grouse PHMA populations. Sufficient demonstration of "no declines" should be coordinated with the WGFD and USFWS. Areas that are currently unavailable due to the need to protect sensitive resources would remain unavailable to wind energy development[1].	**GRSG-WS-GL-001-Guideline –** In priority habitat management areas and sagebrush focal areas, restrict authorization of wind utility-scale and/or commercial energy development except for on-site power generation associated with existing industrial infrastructure (e.g., mine site).
38	The use of guy wires for MET tower supports would be avoided within sage-grouse PHMA. All existing and any new unavoidable guy wires should be marked with recommended bird deterrent devices. The siting of new temporary MET towers within sage-grouse PHMA would be avoided within 2 miles of occupied sage-grouse leks, unless they are out of the direct line of sight of the occupied lek.	**GRSG-LR-SUA-GL-001-Guideline -** Authorization of new temporary MET towers should be avoided in priority habitat management areas and sagebrush focal areas within two miles of active greater sage-grouse leks, unless they are out of direct line of sight of the occupied lek.
	Land Tenure Adjustments (Acquisitions, Land Exchanges, Transfers and Sales)	
40	Lands classified as PHMAs for Greater Sage-Grouse would be retained in federal management unless: (1) the agency can demonstrate that disposal of the lands will provide a net conservation gain to the Greater Sage-Grouse or (2) the agency can demonstrate that the disposal of the lands will have no direct or indirect adverse impact on conservation of the Greater Sage-Grouse. Exceptions would be considered where there is mixed ownership and land exchanges would allow for additional or more contiguous federal ownership patterns within PHMAs. For PHMAs with minority federal ownership, an additional, effective mitigation agreement would be included for any disposal of federal land. As a final preservation measure, consideration should be given to pursuing a permanent conservation easement. For lands in General Habitat Management Areas that are identified for disposal, the BLM will only dispose of such lands consistent with the goals and objectives of this plan, including, but not limited to, the land use plan goal to conserve, recover, and enhance sage-grouse habitat on a landscape scale.	**GRSG-LR-LOA-ST-001-Standard** – In priority habitat management areas and sagebrush focal areas, do not approve land ownership adjustments that would result in a net loss or degradation of greater sage-grouse habitat. Exceptions include when there is mixed ownership and adjustments would allow for additional or more contiguous federal ownership patterns that support improved greater sage-grouse population trends and habitats.
41	Areas where acquisitions (including subsurface mineral rights) or conservation easements would benefit sage-grouse habitat would be identified.	
42	Sage-grouse habitat requirements would be utilized to prioritize parcels for exchange or acquisition within sage-grouse PHMA.	See GRSG-LR-LOA-ST-001-Standard at MA #40.
43	Within sage-grouse PHMA, non-mineral withdrawals would be evaluated to determine if the withdrawal action is consistent with sage-grouse conservation.	**GRSG-LR-LW-GL-001-Guideline** – In priority habitat management areas and sagebrush focal areas, utilize land withdrawals as a tool, where appropriate and subject to valid existing rights, to prevent activities that will be detrimental to greater sage-grouse or their habitats.
	Livestock Grazing Management	
45	The BLM/Forest Service would work cooperatively with permittees, lessees, and other landowners to develop voluntary grazing management strategies that integrate both public and private lands into single management units to improve sage-grouse habitat.	
	Livestock Grazing Permit Monitoring	
46		**GRSG-LG-GL-001-Guideline** - Grazing guidelines in table 3 should be applied in each of the seasonal habitats as displayed. If values in table 3 cannot be achieved based upon a site-specific analysis using Ecological Site Descriptions, long-term ecological

		site capability analysis, or other similar analysis, adjust grazing management to move towards desired habitat conditions in table 3 consistent with the ecological site capability. Table 3 Do not use drought and degraded habitat condition to adjust values. Grazing guidelines in table 3 would not apply to isolated parcels of National Forest System lands that have less than 200 acres of greater sage-grouse habitat. **GRSG-LG-GL-002-Guideline** – On the Thunder Basin National Grassland, if 90% or more of the allotment falls within nesting or brood rearing habitat, 25% of the allotment would be exempted from the breeding/nesting residual perennial grass height guidelines in Table 3. **GRSG-LG-GL-008-Guideline** – On the Thunder Basin National Grassland, where general habitat management areas overlap with Management Area 8.4 (Mineral Production), Management Area 3.63 (Black-footed Ferret Reintroduction Habitat), or other designated areas for short-grass species, livestock grazing should be managed to meet the objectives for that Management Area.
	Permit Renewals	
48	The NEPA analysis for renewals and modifications of livestock grazing permits/leases that include lands within SFAs and PHMAs will include specific management thresholds based on GRSG Habitat Objectives Table and Land Health Standards (43 CFR 4180.2) and defined responses that will allow the authorizing officer to make adjustments to livestock grazing without conducting additional NEPA.	See GRSG-LG-GL-001-Guideline in MA #46.
49	BLM monitoring would be used to evaluate progress toward achieving land health standards within PHMAs and, where not achieved, to determine if existing grazing management practices or levels of grazing use on public lands are significant factors in failing to meet, maintain or make progress towards achieving the standards and conform with the guidelines, which through this process will identify appropriate actions to address non-achievement and non-conformance. Allotments within SFAs, followed by those within PHMAs, and focusing on those containing riparian areas, including wet meadows, will be prioritized for field checks to help ensure compliance with the terms and conditions of the grazing permits. Field checks could include monitoring for actual use, utilization, and use supervision. The BLM will prioritize (1) the review of grazing permits/leases, in particular to determine if modification is necessary prior to renewal, and (2) the processing of grazing permits/leases in SFAs followed by PHMAs outside of the SFAs. In setting workload priorities, precedence will be given to existing permits/leases in these areas not meeting Land Health Standards, with focus on those containing riparian areas, including wet meadows. The BLM may use other criteria for prioritization to respond to urgent natural resource concerns (e.g., fire) and legal obligations.	See GRSG-LG-GL-001-Guideline in MA #46.
50	At the time a permittee or lessee voluntarily relinquishes a permit or lease, the BLM will consider whether the public lands where that permitted use was authorized should remain available for livestock grazing or be used for other resource management objectives.	**GRSG-LG-GL-003-Guideline** – In priority habitat management areas and sagebrush focal areas, when livestock grazing permits and/or grazing preference are voluntarily relinquished, consider closure of grazing allotments, pastures, or portions of pastures, or managing the allotment as a forage reserve where removal of livestock grazing would enhance the ability to achieve desired habitat conditions displayed in Table 2.

52	When periods of drought occur, where appropriate, the AO would evaluate strategies to address drought through coordination with grazing permittee/lessee and annual billings processes. In cooperation with livestock grazing permittees/lessees, drought contingency plans would be developed at the appropriate landscape unit that provide for a consistent/appropriate BLM/Forest Service response. Contingency plans should establish strategies for addressing ongoing drought and post-drought recovery.	
	Range Development Projects	
53	In sage-grouse GHMA and PHMA, existing range improvements (e.g., fences, livestock/wildlife watering facilities) would continue to be evaluated and modified when necessary. The potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements would be evaluated. The potential for modification of those structural range improvements identified as posing a risk would be addressed. Supplements and supplemental feeding would continue to be authorized where appropriate.	
	Livestock Trailing	
54	Livestock trailing that is authorized would include a trailing plan to utilize non-habitat to the extent possible, include specific routes and timeframes for trailing, utilize existing trails, and avoid stopovers on occupied leks, as appropriate.	**GRSG-LG-GL-005-Guideline** –Trailing livestock should be routed through non-habitat, to the extent feasible or in areas that will minimize impacts to greater sage-grouse and their habitats. Specific routes and timeframes should be identified, existing trails should be used, and stopovers on occupied leks should be restricted. **GRSG-LG-GL-004-Guideline** - Domestic sheep bedding areas and herder camps should be located in areas of least conflict with greater sage-grouse seasonal uses. Bedding sheep and locating camps within 0.6 mi of a lek in priority habitat management areas and sagebrush focal areas should be avoided during lekking (March 1 to May 15).
	Riparian Area Management	
55	Grazing between riparian habitats and upland habitats would be balanced to promote the production and availability of beneficial forbs to Greater Sage-Grouse for use during nesting and brood-rearing. Grazing in meadows, mesic habitats, and riparian pastures also would be balanced to promote the production and availability of beneficial grasses and forbs for use during late brood-rearing within sage-grouse PHMA, while maintaining upland conditions and functions.	See GRSG-LG-GL-001-Guideline at MA #46
56	Range improvement projects would be planned and authorized in a way that contributes to rangeland health and maintains and/or improves Greater Sage-Grouse and its habitat.	**GRSG-LG-GL-006-Guideline** – In priority habitat management areas and sagebrush focal areas, new permanent livestock facilities (except fences) should not be constructed within 0.6 miles from the perimeter of occupied leks. In general habitat management areas, new permanent livestock facilities should not be constructed within 0.25 miles of occupied leks.
57	Existing water developments associated with springs and seeps would be evaluated and associated pipelines/structures to those developments having a negative effect on sage-grouse PHMA would be modified.	
	Minerals Management	
	Exceptions to lease stipulations, Conditions of Approval, and terms and conditions	
58	Exceptions waivers, and modifications to lease stipulations, COAs, and T&Cs, etc. for sage-grouse would continue to be considered on a case-by-case basis consistent with approved LUPs and other BLM policy and regulations as they relate to exceptions within sage-grouse PHMA and GHMA.	**GRSG-TDDD-ST-010-Standard** – On a case-by-case basis, and only when it can be demonstrated that activity will not cause declines in greater sage-grouse populations, allow exceptions, modifications, and waivers for Standards GRSG-TDDD-ST-003, 004, 005, 006, 007, 008, and 009 . The authorized officer may grant an exception if a review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of greater sage-grouse.

	Fluid Minerals Unleased Estate	
60	The BLM would allow oil and gas leasing consistent and subject to the leasing stipulations analyzed in the timing, distance, disturbance, and density restrictions sections (Map 2-8).	**GRSG-M-FMUL-ST-001-Standard** - In priority and general habitat management areas and sagebrush focal areas, new oil and gas leases may be offered consistent and subject to the leasing stipulations displayed in the timing, distance, disturbance, and density restrictions standards in section GRSG-TDDD.
61	A minimum lease size of 640 contiguous acres of federal mineral estate would be applied within sage-grouse PHMA. Preliminary parcels reviewed for possible offering in a lease sale should comply with this minimum lease size. Expressions of interest that are less than this minimum lease size would be evaluated and modified by the BLM to meet the minimum lease size, where possible, prior to review for possible offering in a lease sale.	The Forest Service does not have jurisdiction over lease size requirements.
62	Geophysical exploration projects that are designed to minimize habitat fragmentation within sage-grouse PHMA would be allowed, except were prohibited or restricted by existing LUP decisions.	**GRSG-M-FMUL-ST-002-Standard** – In priority habitat management areas and sagebrush focal areas, require geophysical exploration projects to be designed to minimize habitat fragmentation.
63	In cases where federal oil and gas leases have been issued with stipulations varying from those in Appendix E for the protection of sage-grouse or their habitats being provided in the applicable LUP decision, as revised or amended, their inclusion as permit COAs would be considered when approving exploration and development activities through completion of the environmental record of review (43 CFR 3162.5 and 36 CFR 228.108), including appropriate documentation of compliance with NEPA. Overall consideration shall be given to minimizing the impact to sage-grouse through a project design that avoids, minimizes, reduces, rectifies, and/or adequately compensates for direct and indirect impacts to sage-grouse PHMA or use and includes applicable and technical COAs. Selection and application of these measures shall be based on current science and research on the effects to important breeding, nesting, brood-rearing, and wintering areas. For proposed operations in PHMA, the Surface Use Plan of Operations (see 43CFR 3162.3-1(f)) shall address, at a minimum, the anticipated noise, density and amount of disturbance, mechanical movement (e.g., pump jacks), permanent and temporary facilities, traffic, phases of development over time, offsite mitigation, and expected periods of use associated with the proposed project. Seasonal habitats or project features related to potential sage-grouse impacts that are not addressed in the SUPO based on site-specific or project-specific considerations shall be noted in the project file, along with a rationale for not including them. In this process the BLM would evaluate, among other things: 1. Whether the conservation measure is "reasonable" (43 CFR 3101.1-2) and consistent with valid existing rights 2. Whether the action is in conformance with the approved LUP; and the effectiveness of the proposed mitigation measures. The BLM would work with project proponents in these situations to promote measurable sage-grouse conservation objectives such as, but not limited to, consolidation of project related infrastructure to reduce habitat fragmentation and loss and to promote effective conservation of seasonal habitats and connectivity areas that support population management objectives set by the State.	**GRSG-M-FML-ST-001-Standard** – In priority habitat management areas and sagebrush focal areas when approving the Surface Use Plan of Operation portion of the Application for Permit to Drill on existing leases that are not yet developed, require that leaseholders avoid and minimize surface disturbances and disruptive activities. If impacts from surface disturbance and disruptive activities remain after avoidance and minimization strategies, require leaseholders to provide timely, durable compensatory mitigation projects to offset residual impacts. Valid existing rights would be recognized. **GRSG-M-FML-ST-004-Standard** – In priority and general habitat management areas and sagebrush focal areas, when authorizing development of fluid mineral resources, prioritize development in non-habitat areas first and then in the least suitable habitat for greater sage-grouse, subject to valid existing rights, law, and regulations. **GRSG-M-FML-GL-001-Guideline** – In priority and general habitat management areas and sagebrush focal areas on existing leases, operators should be encouraged to reduce disturbance to greater sage-grouse habitat. At the time of approval of the Surface Use Plan of Operation portion of the Application for Permit to Drill, terms and conditions should be included to reduce disturbance to greater sage-grouse habitat, where appropriate and feasible and consistent with the rights granted to the lessee. Valid existing rights would be recognized and respected. See **GRSG-M-FML-GL-002-Guideline** at MA #17.

	The BLM would continue to work with project proponents (including those from within the BLM) and the WGFD to site their projects in locations that meet the purpose and need for their project, but have been determined to contain the least sensitive habitats (based on vegetation, topography, or other habitat features) and resources whether inside or outside of PHMA. Valid existing rights would be recognized and respected.	
	Fluid Minerals Leased Estate	
66	Master Development Plans would be considered and encouraged for projects involving multiple proposed disturbances within sage-grouse PHMA.	
67	Within sage-grouse PHMA, unitization would be encouraged as a means of minimizing adverse impacts to sage-grouse to reduce fragmentation and surface disturbing and disruptive activities. Require unitization when deemed necessary for proper development and operation of an area or to facilitate more orderly (e.g., phased and/or clustered) development as a means of minimizing adverse impacts to resources, including Greater Sage-Grouse, so long as the unitization plan adequately protects the rights of all parties, including the United States.	**GRSG-M-FMO-GL-005-Guideline –** In priority and general management areas and sagebrush focal areas to keep habitat disturbance at a minimum, a phased development approach should be applied to fluid mineral operations, wherever possible, consistent with the rights granted under the lease. Disturbed areas should be reclaimed as soon as they are no longer needed for mineral operations.
68	For proposed actions in sage-grouse PHMA, determine whether a categorical exclusion is applicable and if so, closely examine the extraordinary circumstances, if applicable, to determine whether one or more exists that would require preparation of a NEPA analysis. If a categorical exclusion applies, and no extraordinary circumstances exist, determine whether preparing a NEPA analysis would help inform decision making.	
69	A reclamation bond would be required on all projects that is commensurate with the scope, scale, size of the project within sage-grouse PHMAs. Partial bonding may be appropriate depending on these factors.	
69a	No similar action	**GRSG-M-FML-ST-002-Standard** – In priority habitat management areas and sagebrush focal areas, when facilities are no longer needed or leases are relinquished, require reclamation plans to include terms and conditions to restore habitat to desired conditions as displayed in Table 2.
71	Where the federal government owns the mineral estate, and the surface is in non-federal ownership, apply the same stipulations, COAs, and/or conservation measures and RDFs applied if the mineral estate is developed on BLM-administered lands in that management area, to the maximum extent permissible under existing authorities, and in coordination with the landowner.	The Forest Service has no jurisdiction over mineral estate when they are not the surface owner. The BLM is solely responsible for mineral estate under non-federal surface ownership.
72	Where the federal government owns the surface and the mineral estate is in non-federal ownership, apply appropriate surface use COAs, stipulations, and mineral RDFs through ROW grants or other surface management instruments, to the maximum extent permissible under existing authorities, in coordination with the mineral estate owner/lessee.	**GRSG-M-FML-GL-003-Guideline** - In priority and general habitat management areas and sagebrush focal areas, where the federal government owns the surface and the mineral estate is in non-federal ownership coordinate with the mineral estate owner/lessee to apply appropriate stipulations, conditions of approval, conservation measures and required design features to the appropriate surface management instruments to the maximum extent permissible under existing authorities.
	Solid Leasable Minerals	
75	At the time an application for a new coal lease or lease modification is submitted to the BLM, the BLM will determine whether the lease application area is "unsuitable" for all or certain coal mining methods pursuant to 43 CFR 3461.5. PHMA is essential habitat for maintaining Greater Sage-Grouse for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).	**GRSG-M-CM-ST-002-Standard** – Priority habitat management areas and sagebrush focal areas are essential habitat for maintaining greater sage-grouse for purposes of the suitability criteria set forth at 43 CFR 3461.5(o)(1).
76	Upon receipt of a coal lease application proposing underground mining methods that include surface operations and impacts within sage-grouse PHMAs, Criterion 15 would be applied and	**GRSG-M-CMUL-ST-001-Standard** – Apply all restrictions listed in the Timing, Distance, Density and Disturbance section to coal exploration and new coal lease projects.

	the area would be identified as suitable for further coal leasing consideration after consultation with the state and, where applicable, surface management agency to determine that all or certain stipulated methods of coal mining will not have a significant long-term impact on sage-grouse. Stipulated methods may include, but not limited to, underground mining methods with no placement of surface facilities. Unsuitability is not applied to underground operations without surface impacts (43 CFR 3461.1) This would be consistent with IM WY-2012-019, which says that the BLM will assess potential impacts to sage-grouse through the NEPA process, and that the State regulatory agency would apply this mitigation, as well protective measures consistent with the State Policy for solid leasable mining action at the permitting stage.	
77	Coal exploration activities could be allowed in sage-grouse PHMAs if they can be completed in compliance to surface occupancy and disturbance and density stipulations analyzed through the DDCT process.	See GRSG-M-CMUL-ST-001-Standard at MA #76. **GRSG-M-CML-GL-001-Guideline** – In priority and general habitat management areas and sagebrush focal areas, when coal leases are subject to readjustment, additional requirements should be included in the readjusted lease to protect and reduce threats to greater sage-grouse and their habitats to conserve, enhance, and restore habitat for long-term viability.
	Solid Leasable Minerals (Other than Coal and Oil Shale)	
78	Exploration licenses and prospecting permits would be considered with appropriate mitigating measures. All non-energy leasable mineral activities would be considered in sage-grouse PHMAs, provided that the activities can be completed in compliance to surface occupancy and disturbance and density stipulations (Map 2-28) analyzed through the DDCT process.	**GRSG-M-NEL-GL-001-Guideline** – In priority and general habitat management areas and sagebrush focal areas, at the time of issuance of prospecting permits, exploration licenses and leases, or readjustment of leases for non-energy leasable minerals, the Forest Service should provide recommendations to the Bureau of Land Management for the protection of greater sage-grouse and their habitats. Apply all restrictions listed in the Timing, Distance, Density and Disturbance section to non-energy leasable minerals exploration and development. **GRSG-M-NEL-GL-002-Guideline** - In priority and general habitat management areas and sagebrush focal areas, the Forest Service should recommend to the Bureau of Land Management that expansion or readjustment of existing leases avoid, minimize, or mitigate the effects to greater sage-grouse and their habitat.
	Locatable Mineral Activities	
79	1,761,547 acres are withdrawn from mineral entry for the protection of sensitive resources. 252,161 acres within SFAs (see management action 139 for identification of SFAs) would be recommended for withdrawal from the General Mining Act of 1872, subject to valid existing rights. 894,061 acres would be considered for recommendation for withdrawal from mineral entry, based on risk to sage-grouse and its habitat from conflicting locatable mineral potential and development. A total of approximately 20,357,626 acres are open to locatable mineral entry (Map 2-23).Operators may be requested to submit modifications to the accepted notice or approved plan of operations so that the operations minimally impact PHMAs. The AO may convey to the operator suggested conservation measures, based upon the notice or plan level operations and the geographic area of those operations [also called the project area which is defined in 43 CFR 3809.5 and 36 CFR 228.3. These suggested conservation measures include measures that support the overall goals and objectives of the core population area strategy, though measures listed for protection of sage-grouse breeding, nesting, brood-rearing, and wintering may not be	**GRSG-M-LM-ST-001-Standard** – In priority habitat management areas and sagebrush focal areas, approve Plans of Operation with mitigation to protect greater sage-grouse and their habitats, consistent with the rights of the mining claimant as granted by the Mining Law of 1872, as amended. Apply all restrictions listed in the Timing, Distance, Density and Disturbance section (GRSG-TDDD) to locatable minerals exploration and development. **GRSG-M-LM-ST-002-Standard** – The disturbance cap described in GRSG-TDDD-ST-009-Standard will not be applied to foreclose development of locatable minerals on unpatented claims located under the General Mining Act of 1872, as amended; the disturbance from locatable mining will be accounted for in determining the percent disturbance and whether the cap has been exceeded.

	reasonable or applicable to the BLM's determination of whether the proposed operations will cause unnecessary or undue degradation under 43 CFR 3809.5 and 36 CFR 228.3. The request containing the suggested conservation measures must make clear that the operator's compliance is not mandatory. Notices or Plans of Operation, or modifications thereto, submitted following the issuance of this guidance: As part of the 15 day completeness review of notices [or modifications thereto] and 30 day completeness review of plans of operations [or modifications thereto], the proposed project area(s) where exploration, development, mining, access and reclamation would take place should be reviewed for overlap of PHMAs in the corporate GIS database. If there is overlap, the BLM AO may notify the operator of ways that they may minimize impacts to PHMAs and request the operator to amend its notice or plan to include such measures. The request to amend the submitted notice or plan of operations must make clear that the operator's compliance is not mandatory and that including such measures is not a requirement for completeness of either the notice or a plan of operations, nor is it a condition of acceptance of the notice or approval of the plan of operations.	
	Salable Minerals	
80	All salable mineral activities within sage-grouse PHMAs would be considered, provided they can be completed in compliance within surface occupancy, seasonal restrictions, and disturbance and density stipulations (Map 2-18) analyzed through the DDCT process.	**GRSG-M-MM-ST-001-Standard** – Apply all restrictions listed in the Timing, Distance, Density and Disturbance section to authorizations for mineral material sales and free use.
81	Closure and restoration of salable mineral pits no longer in use would be considered to meet sage-grouse habitat conservation objectives. Emphasis would be given to reclamation/restoration of sage-grouse PHMAs as a viable long term goal to improve sage-grouse habitat.	**GRSG-M-MM-ST-002-Standard** - Permits for mineral material operations in priority and general habitat management areas and sagebrush focal areas, must include appropriate requirements for reclamation of the site to restore, enhance, or maintain desired habitat conditions displayed in Table 2.
	Recreation and Visitor Services	
	Outdoor Recreation Management	
82	BLM SRPs would be allowed in sage-grouse PHMAs, unless negative impacts to sage-grouse cannot be adequately mitigated.	**GRSG-R-ST-001-Standard** – In priority and general habitat management areas and sagebrush focal areas, do not authorize temporary recreation uses (i.e., facilities or activities) that result in loss of habitat or would have long-term (i.e., greater than 5 years) negative impact on greater sage-grouse or their habitats. **GRSG-R-GL-001-Guideline** – In priority and general habitat management areas and sagebrush focal areas, terms and conditions that protect and restore greater sage-grouse habitats within the permit area should be included in new recreation special use authorizations. During renewal, amendment, or reauthorization, existing permits and operating plans should also be modified.
82a	In PHMAs, do not construct new recreation facilities (e.g., campgrounds, trails, trailheads, staging areas) unless the development would have a net conservation gain to Greater Sage-Grouse habitat (such as concentrating recreation, diverting use away from critical areas, etc.), or unless the development is required for visitor safety or resource protection.	**GRSG-R-GL-002-Guideline** – In priority habitat management areas and sagebrush focal areas, new recreational facilities or expansion of existing recreational facilities (e.g., roads, trails, campgrounds), including special use authorizations for facilities and activities, should not be approved unless the development results in a net conservation gain to greater sage-grouse and/or their habitats (such as concentrating recreation, diverting use away from critical areas, etc.) or the development is required for visitor safety.
	Special Designations and Other Management Areas	

84	New sage-grouse conservation ACECs would not be designated.	This LUP amendment would not designate Greater Sage-Grouse Special Interest Areas.
	Special Status species	
4	Include the collection of baseline data and outline post-project monitoring components into project planning, as appropriate and necessary.	
12	Existing notices and approved plans of operations under 43 CFR 3809[7]: For projects that overlap PHMAs, operators may be requested to submit modifications to the accepted notice or approved plan of operations so that the operations minimally impact PHMAs (core only). The AO may convey to the operator suggested conservation measures, based upon the notice or plan level operations and the geographic area of those operations (also called the project area, which is defined by the BLM in 43 CFR 3809.5 and the Forest Service in 36 CFR 228.3). These suggested conservation measures include measures that support the overall goals and objectives of the priority/core population area strategy and may not be reasonable or applicable to the BLM/Forest Service's determination of whether the proposed operations will cause unnecessary or undue degradation under 43 CFR 3809.5 or likely cause a significant disturbance of surface resources under 36 CFR 228.4. The request containing the suggested conservation measures must make clear that the operator's compliance is not mandatory. Notices or plans of operation, or modifications thereto, submitted following the issuance of this guidance: As part of the 15-day completeness review of notices (or modifications thereto) and 30-day completeness review of plans of operations (or modifications thereto), the proposed project area(s) where exploration, development, mining, access and reclamation would take place should be reviewed for overlap of sage-grouse PHMAs in the corporate GIS database. If there is overlap, the BLM/Forest Service AO may notify the operator of ways that they may minimize impacts to PHMAs (core only) and request the operator to amend its notice or plan to include such measures. The request to amend the submitted notice or plan of operations must make clear that the operator's compliance is not mandatory and that including such measures is not a requirement for completeness of either the notice or a plan of operations, nor is it a condition of acceptance of the notice or approval of the plan of operations.	See **GRSG-M-LM-ST-001-Standard** at MA #79.
16	The official Wyoming sage-grouse lek database is maintained by the WGFD in accordance with Appendix 4B of the Umbrella Memorandum of Understanding (MOU) between the WGFD and BLM/Forest Service (WGFD and BLM 1990). The MOU states that agencies will meet at least annually to coordinate and review the accuracy of data, and incorporate the most up-to-date information.	
137	The Greater Sage-Grouse adaptive management plan (Appendix D) provides regulatory assurance that unintended negative impacts to Greater Sage-Grouse habitat will be addressed before consequences become severe or irreversible. Adaptive management triggers are essential for identifying when potential management changes are needed in order to continue meeting Greater Sage-Grouse conservation objectives. With respect to sage-grouse, all regulatory entities in Wyoming, including the BLM and FS, use soft and hard triggers. Soft and hard triggers are focused on three metrics: 1) number of active	**GRSG-GRSGH-ST-002-Standard** - When: 1) annual lek counts, wing counts, aerial surveys, habitat monitoring or Density Disturbance Calculation Tool evaluations show deviation from normal annual fluctuations in greater sage-grouse habitat or populations for two consecutive years that may indicate a long-term downward trend; or 2) monitoring identifies other negative population or habitat anomalies for greater sage-grouse, conduct an evaluation to determine causal factors and develop an appropriate response strategy. This strategy may include curtailment of

[7] These regulations apply to the exploration and development of locatable minerals on placer claims and lode claims, as well as exploration on tunnel sites and mineral processing operations on mill sites The location and maintenance of claims and sites are regulated under 43 CFR Subpart 3830.

	leks, 2) acres of available habitat, and 3) population trends based on annual lek counts. Soft Triggers Response: Soft triggers require immediate monitoring and surveillance to determine causal factors and may require curtailment of activities in the short- or long-term, as allowed by law. The project level adaptive management strategies will identify appropriate responses where the project's activities are identified as the causal factor. The management agency (BLM and/or Forest Service) and the AMWG will implement an appropriate response strategy to address causal factors not attributable to a specific project or to make adjustments at a larger regional or state-wide level. Hard Trigger Response: Upon determination that a hard trigger has been tripped, the BLM and/or Forest Service will immediately defer issuance of discretionary authorizations for new actions for a period of 90 days. In addition, within 14 days of a determination that a hard trigger has been tripped, the AMWG will convene to develop an interim response strategy and initiate an assessment to determine the causal factor or factors (hereafter called the causal factor assessment).	activities that may adversely affect greater sage-grouse populations or habitat. **GRSG-GRSGH-ST-003-Standard** - Variability in: 1) number of active leks; 2) acres of available greater sage-grouse habitat; or 3) greater sage-grouse population trends based on lek counts can provide catastrophic indicators that greater sage-grouse is not responding to conservation measures set forth in the plan or that large scale negative impacts to greater sage-grouse populations or habitat are occurring. If two of the preceding three indicators exceed 60% of normal variability in a year, or one of the preceding three indicators exceeds 40% of normal variability for three out of any five years, desired conservation results are not being attained and within 14 days the Adaptive Management Working Group (representatives from the Bureau of Land, Forest Service, US Fish and Wildlife Service, and State of Wyoming) will convene to develop an interim response strategy and initiate an assessment to determine the causal factors.
138	The Wyoming Greater Sage-Grouse 9-Plan LUP Amendment will include the requirement for the development of EIS /project-level adaptive management strategies in support of the population management objectives for Greater Sage-Grouse set by the State of Wyoming (State of WY EO 2011-05). These adaptive management strategies will be developed in partnership with the WGFD, project proponents, partners, and stakeholders and will incorporate the best available science. The purpose of these strategies is to address localized Greater Sage-Grouse population declines by providing the framework in which management will be changed if monitoring identifies significant negative population impacts. The current population objective is to maintain at least 67% of the 2005-2008 Greater Sage-Grouse Core Area Population within the State of Wyoming.	
	Travel Management	
86	The Casper Field Office Poison Spider OHV Park (290 acres) would remain as an "open" OHV area. The non-sand dune portions of the following OHV "open" areas within sage-grouse PHMAs would be limited to existing roads and trails: 1. Rawlins Field Office: Dune Pond Cooperative Management Area. 2. Rock Springs Field Office: Portion of the Greater Sand Dunes Recreation Area.	There are no "open" OHV areas on National Forest System Lands included in this LUP amendment.
87	In PHMAs and GHMAs, temporary closures will be considered in accordance with 43 CFR subpart 8364 (Closures and Restrictions); 43 CFR subpart 8351 (Designated National Area); 43 CFR subpart 6302 (Use of Wilderness Areas, Prohibited Acts, and Penalties); 43 CFR subpart 8341 (Conditions of Use). Temporary closure or restriction orders under these authorities are enacted at the discretion of the authorized officer to resolve management conflicts and protect persons, property, and public lands and resources. Where an authorized officer determines that off-highway vehicles are causing or will cause considerable adverse effects upon soil, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas shall be immediately closed to the type(s) of vehicle causing the adverse effect until the adverse effects are eliminated and measures implemented to prevent recurrence. (43 CFR 8341.2) A closure or restriction order should be considered only after other management strategies and alternatives have been explored. The duration of temporary	Motorized travel is currently limited to designated roads and trails on National Forest System lands.

	closure or restriction orders should be limited to 24 months or less; however, certain situations may require longer closures and/or iterative temporary closures. This may include closure of routes or areas.	
88	New primary and secondary roads would be avoided within 1.9 miles of the perimeter of occupied sage-grouse leks within sage-grouse PHMA. Other new roads would be prohibited within 0.6 miles of the perimeter of occupied sage-grouse leks within PHMA.	**GRSG-RT-ST-001-Standard** - Restrict construction of new category level 4 and 5 roads within 1.9 miles of the perimeter of occupied greater sage-grouse leks within priority habitat management areas and sagebrush focal areas unless construction allows decommissioning of an existing route that negatively affects greater sage-grouse. **GRSG-RT-ST-002-Standard** - Do not authorize any category of road construction within 0.6 miles from the perimeter of occupied leks in priority habitat management areas and sagebrush focal areas or 0.25 miles from the perimeter of occupied leks in general habitat management areas as described in GRSG-TDDD-ST-001 and 002-Standards.
89	Within sage-grouse PHMA, no upgrading of existing routes that would change route category or capacity would be allowed unless the upgrading would have minimal impact on sage-grouse in sage-grouse PHMA, was necessary for motorist safety, or eliminated the need to construct a new road.	**GRSG-RT-ST-003-Standard** - In priority habitat management areas and sagebrush focal areas, do not allow upgrading of existing routes that would change route category (level 1 through 5) or capacity unless the upgrading would have minimal impact on greater sage-grouse, is necessary for motorist safety, or eliminates the need to construct a new road.
90	In sage-grouse PHMAs, existing roads or realignments would be used to access valid existing rights that are not yet developed. If valid existing rights could not be accessed via existing roads, any new road would be constructed to the absolute minimum standard necessary, and the surface disturbance would be added to the total disturbance in the sage-grouse PHMA. If that disturbance exceeds 5% for that area, additional, effective mitigation necessary would be evaluated and implemented to offset the resulting loss of sage-grouse habitat.	**GRSG-RT-ST-004-Standard** - If necessary to construct new roads and trails in priority habitat management areas or sagebrush focal areas for one of the reasons listed in GRSG-RT-ST-003-Standard or to access valid existing rights, limit construction to the minimum standard, length, and number and avoid, minimize, and mitigate impacts. See the Density Disturbance Calculation information referenced in Appendix I.
91	For roads, primitive roads and trails not designated in travel management plans within sage-grouse PHMAs, natural reclamation of roads and trails would be allowed in appropriate situations where additional resource damage is not foreseeable. This would include primitive route/roads that were not designated in Wilderness Study Areas and within lands with wilderness characteristics that have been selected to be managed to retain those characteristics for protection.	**GRSG-RT-GL-003-Guideline** – In priority and general habitat management areas and sagebrush focal areas, when decommissioning roads and unauthorized routes, restoration activity should be designed to move habitat towards desired conditions displayed in Table 2.
92	Within sage-grouse PHMAs, when reseeding roads and trails, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered.	See **GRSG-GRSGH-GL-006-Guideline** shown at MA #100.
	Vegetation Management	
93	Within sage-grouse PHMA and GHMA, the BLM would manage for vegetation composition and structure that reflects ESD or other methods that reference site potential or comparable standard to achieve sage-grouse and other resource objectives.	**GRSG-GRSGH-GL-007-Guideline** - When breeding and nesting habitat overlaps with other seasonal habitats, habitat should be managed for breeding and nesting desired habitat conditions displayed in Table 2.
94	Within sage-grouse PHMAs in northeast Wyoming (as mapped in WY EO 2011-5), vegetation treatments in nesting and wintering habitat that would reduce sagebrush canopy to less than 15% would not be conducted.	**GRSG-GRSGH-GL-002-Guideline** - Within priority habitat management areas and sagebrush focal areas in northeast Wyoming, vegetation treatments in nesting and wintering habitat that would reduce sagebrush canopy to less than 15% should be restricted.
95	For vegetation treatments in sagebrush within sage-grouse PHMAs , refer to Appendix A, WGFD Protocols for Treating Sagebrush to Benefit Sage-Grouse (WGFD 2011, as updated) and	**GRSG-GRSGH-GL-001-Guideline** – Sagebrush removal in priority habitat management areas and sagebrush focal areas and in

	BLM Washington Office Instruction Memorandum 2013-128128 (Sage-grouse Conservation Related to Wildland Fire and Fuels Management). These recommended protocols would be used in determining whether proposed treatment constitutes a "disturbance" that would contribute toward the 5% threshold within sage-grouse PHMA maintenance. Additionally, these protocols would be used to determine whether the proposed treatment configuration would be expected to have neutral or beneficial impacts for PHMA (core only) populations or if they represent additional habitat loss or fragmentation. Treatments to enhance sagebrush/grasslands habitat for sage-grouse would be evaluated based upon habitat quality and the functionality/use of treated habitats post-treatment. The BLM would work collaboratively with partners at the state and local level to maintain and enhance sage-grouse habitats.	wintering habitat should be restricted unless necessary to support attainment of desired habitat conditions displayed in Table 2.
96	For vegetation treatments in sagebrush within PHMAs, refer to Appendix A, WGFD Protocols for Treating Sagebrush to Benefit Sage-Grouse (WGFD 2011, as updated). These recommended protocols, subject to seasonal conditions of approval, would be used in determining whether proposed treatment constitutes a "disturbance" that would contribute toward the 5% threshold for habitat maintenance. Additionally, these protocols would be used to determine whether the proposed treatment configuration would be expected to have neutral or beneficial impacts for PHMA (core only) populations or if they represent additional habitat loss or fragmentation. Treatments to enhance sagebrush/grasslands habitat for sage-grouse would be evaluated based upon habitat quality and the functionality/use of treated habitats post-treatment. The BLM would work collaboratively with partners at the state and local level to maintain and enhance sage-grouse habitats. Seasonal restriction would be applied, as needed, for implementing fuels management treatments according to the type of seasonal habitat present.	See **GRSG-GRSGH-GL-001-Guideline** shown at MA #95.
97	Grazing would be deferred on treated areas for two full growing seasons unless vegetation objectives or vegetation recovery indicates a shorter or longer rest period is necessary based on vegetation monitoring results.	Grazing would be deferred on treated areas until vegetation objectives or appropriate vegetation recovery is achieved.
98	For vegetation treatments in sagebrush within sage-grouse PHMAs, refer to Appendix A, WGFD Protocols for Treating Sagebrush to Benefit Sage-Grouse (WGFD 2011, as updated).	
	Vegetation Reclamation	
99	Reclamation of surface disturbances in sage-grouse PHMAs would be consistent with the Wyoming Reclamation Policy (BLM 2009a) and Appendix C. A monitoring plan would be developed for each restoration or reclamation project and reporting progress and changes in resource condition.	**GRSG-GRSGH-ST-001-Standard –** Design habitat restoration projects to move towards the desired conditions displayed in Table 2 and incorporate the concepts outlined in Appendix C Reclamation Plan and Appendix D Monitoring Framework.
100	Areas for vegetation restoration and/or restoration criteria that include state sage-grouse conservation plans and appropriate local information would be identified. The use of native plants and seeds for restoration would be required unless the probability for success is low (non-native plants and seeds may be used as long as they meet sage-grouse habitat objectives), and restoration	**GRSG-GRSGH-GL-006-Guideline -** In priority and general habitat management areas and sagebrush focal areas, native plant species should be emphasized to restore, enhance, or maintain desired habitat conditions displayed in Table 2.

	management would be designed to obtain long-term persistence based on ESD. Reestablishment of sagebrush cover and desirable understory plants would be the highest priority for restoration efforts. Landscape patterns that most benefit sage-grouse would be restored and created, considering potential changes in climate.	
101	Within sage-grouse PHMAs, implementation of restoration projects would be prioritized based on environmental variables that improve chances for project success in areas most likely to benefit sage-grouse. Restoration would be prioritized in seasonal habitats that are thought to be limiting sage-grouse distribution and/or abundance.	
102	Where probability of success or native seed availability is low or where there is a specific identified purpose that cannot be met with natives, non-native seeds could be used provided they meet sage-grouse habitat conservation objectives. The use of native seeds for fuels management treatment would be prioritized based on availability, adaptation (site potential), and probability of success. Where probability of success or native seed availability is low, non-native seeds may be used to meet Greater Sage-Grouse habitat objectives to trend toward restoring the fire regime. When reseeding, use fire resistant native and non-native species, as appropriate, to provide for fuel breaks. Native seed allocation would be prioritized for use in sage-grouse habitat.	See **GRSG-GRSGH-GL-006-Guideline** shown at MA #100.
103	Post ES&R and BAER management would be designed to ensure long-term persistence of seeded or pre-burn native plants. This may require temporary or long-term changes in livestock grazing, wild horse and burro, and travel management, etc., to achieve and maintain the desired condition of ES&R and BAER projects to benefit sage-grouse (Eiswerth and Shonkwiler 2006).	
104	The role of existing seedings that are currently composed of primarily introduced perennial grasses in and adjacent to sage-grouse PHMAs would be evaluated to determine if they should be restored to sagebrush or habitat of higher quality for sage-grouse. If these seedings are part of an AMP/Conservation Plan or if they provide value in conserving or enhancing the rest of the PHMAs, no restoration would be necessary. The compatibility of these seedings for sage-grouse habitat or as a component of a grazing system would be assessed during the land health assessments (or other analyses [Forest Service only]) (Davies et al. 2011).	
105	Priority would be given for implementing specific sage-grouse habitat restoration projects in areas invaded by annual grasses first to sites that are adjacent to or surrounded by sage-grouse PHMAs. Areas invaded by annual grasses would be second priority for restoration when the sites are not adjacent to PHMAs, but are within 2 miles of PHMAs. The third priority for areas invaded by annual grasses habitat restoration projects would be sites beyond 2 miles of PHMAs. The intent would be to focus restoration outward from existing, intact habitat.	See **GRSG-GRSGH-ST-001-Standard** shown at MA #99.
106	In fire prone areas where sagebrush seed is required for sage-grouse habitat restoration, the BLM/Forest Service would consider establishing seed harvest areas that are managed for seed production and are a priority for protection from outside disturbances.	
107	Vegetation treatment proposals must include evaluation of soils, precipitation, invasive/exotic plants, as well as the current condition of sage-grouse PHMAs. Avoid aerial pesticide/herbicide spraying in favor of ground applications to minimize drift into non-target areas in Greater Sage-Grouse habitat unless benefits of treatments are likely to outweigh impacts.	Vegetation treatment proposals must include evaluation of soils, precipitation, invasive/exotic plants, as well as the current condition of greater sage-grouse habitat. See GRSG-GRSGH-ST-001-Standard at MA #99.
	Grasshopper/Mormon Cricket Control and Management	
108	The BLM could implement treatments within sage-grouse PHMAs where outbreaks of grasshopper or Mormon cricket populations are expected to rise above economic levels. Treatments must be conducted only following reduced agent-area	No similar direction.

	treatments (RAATS) protocols. The BLM would work collaboratively with partners at the federal, state, and local levels, including the Wyoming Weed and Pest Districts within the counties where the treatment is to occur, to maintain and enhance sage-grouse habitats in a manner consistent with the core population area strategy for conservation. The BLM would be directed to utilize the Wyoming Grasshopper and Mormon Cricket Control website as a resource for updated information when conducting analysis of grasshopper and Mormon cricket control in sage-grouse habitats. Avoid aerial pesticide/herbicide spraying in favor of ground applications to minimize drift into non-target areas in Greater Sage-Grouse habitat unless benefits of treatments are likely to outweigh impacts.	
	Wild Horse Management	
109	Within sage-grouse PHMAs, the BLM would review and consider amending BLM Herd Management Area Plans (HMAPs) to incorporate sage-grouse habitat objectives and management considerations for all BLM herd management areas (HMAs).	No similar direction – no wild horse herd management areas on National Forest System Lands in the planning area.
110	Sage-grouse PHMA (core only) management objectives would be considered when evaluating AMLs.	No similar direction – no wild horse herd management areas on National Forest System Lands in the planning area.
111	Sage-grouse PHMA (core only) management objectives would be considered when conducting land health assessments in BLM HMAs.	No similar direction – no wild horse herd management areas on National Forest System Lands in the planning area.
112	When conducting NEPA analysis for wild horse and burro management activities, water developments or other rangeland improvements for wild horses in sage-grouse PHMAs, the direct and indirect effects to sage-grouse populations and habitat would be addressed. Water developments or rangeland improvements would be implemented using the criteria identified for domestic livestock identified above in sage-grouse PHMAs.	No similar direction – no wild horse herd management areas on National Forest System Lands in the planning area.
113	Coordinate with other resources (Range, Wildlife, and Riparian) to conduct land health assessments within all BLM HMAs.	No similar direction – no wild horse herd management areas on National Forest System Lands in the planning area.
	Wildland Fire and Fuels Management	
114	In sage-grouse PHMAs, fuels treatments would be designed and implemented with an emphasis on protecting existing sagebrush ecosystems and enhancing and protecting future sagebrush ecosystems (refer to WGFD Protocols for Treating Sagebrush to Benefit Sage-grouse [WGFD 2011, as updated]) and Appendix A. These recommended protocols would be used in determining whether proposed treatment constitutes a “disturbance” that will contribute toward the 5% threshold for habitat maintenance. Fuel treatments would be designed through an interdisciplinary process to expand, enhance, maintain, and protect Greater Sage-Grouse habitat. Green strips (using native fire resistant/resilient species) and/or fuel breaks would be used, where appropriate, to protect seeding efforts from subsequent fire events. In coordination with the USFWS and relevant state agencies, BLM planning units(Districts) with large blocks of Greater Sage-Grouse habitat would develop, using the assessment process described in Appendix A, a fuels management strategy which considers an up-to-date fuels profile, land use plan direction, current and potential habitat fragmentation, sagebrush and sage-	Same as MA 114 and: see **GRSG-GRSGH-GL-005-Guideline** at MA #10 and **GRSG-FM-ST-001-Standard** at MA #116.

	grouse ecological factors, and active vegetation management steps to provide critical breaks in fuel continuity, where appropriate. When developing this strategy, planning units would consider the risk of increased habitat fragmentation from a proposed action versus the risk of large scale fragmentation posed by wildfires if the action is not taken. Utilizing an interdisciplinary approach, a full range of fuel reduction techniques would be available. Fuel reduction techniques such as grazing, prescribed fire, chemical, biological, and mechanical treatments would be acceptable. Upon project completion, fuels projects would be monitored and managed to ensure long-term success, including persistence of seeded species and/or other treatment components. Invasive vegetation post-treatment would be controlled. Wildfire prevention plans would be developed that explain the resource value of sage-grouse habitat and include fire prevention messages and actions to reduce human-caused ignitions.	
115	Burned areas that are within sage-grouse PHMAs would be restored. Areas containing less than 5% canopy cover and have the potential for 5% canopy cover would be treated as disturbed pending an implementation management plan with trend data showing the area returning to functional sage-grouse habitat. This would be specific only to wildfire situations. The BLM/Forest Service could bring in BAR and BAER teams who would work collaboratively with partners at the federal, state, and local level to rehabilitate and restore sage-grouse habitats in a manner consistent with the core habitat population area strategy for conservation. DDCT reviews would be conducted in coordination with the WGFD Habitat Protection Program located in Cheyenne, Wyoming at the WGFD headquarters. Areas within sage-grouse PHMAs would be high priority for restoration of sage-grouse habitat beyond immediate response.	
116	For fuels management, the BLM would consider multiple tools for fuels reduction and would analyze in NEPA compliance documentation before electing to implement prescribed fire in PHMAs. If prescribed fire is used in Greater Sage-Grouse habitat, the NEPA analysis for the Burn Plan will address: • Why alternative techniques were not selected as a viable options • How Greater Sage-Grouse goals and objectives would be met by its use • How the COT Report objectives would be addressed and met • A risk assessment to address how potential threats to Greater Sage-Grouse habitat would be minimized. Prescribed fire as a vegetation or fuels treatment shall only be considered after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Prescribed fire could be used to meet specific fuels objectives that would protect Greater Sage-Grouse habitat in PHMAs (e.g., creation of fuel breaks that would disrupt the fuel continuity across the landscape in stands where annual invasive grasses are a minor component in the understory, burning slash piles from conifer reduction treatments, used as a component with other treatment methods to combat annual grasses and restore native plant communities). Prescribed fire in known winter range only after the NEPA analysis for the Burn Plan has addressed the four bullets outlined above. Any prescribed fire in winter habitat would need to be designed to strategically reduce wildfire risk around and/or in the winter range and designed to protect winter range habitat quality. Refer to Appendix A, WGFD Protocols for Treating Sagebrush to Benefit Sage-grouse (WGFD 2011, as updated) and BLM Washington Office Instruction Memorandum 2013-128. If	**GRSG-FM-ST-001-Standard** – In priority and general habitat management areas and sagebrush focal areas, when prescribed fire is used for fuels management or vegetation treatments, design the burn to move conditions towards those displayed in table 2. Restrict prescribed fire in areas of Wyoming big sagebrush, other xeric sagebrush species, where cheat-grass or other fire-invasive species occur, and/or within areas of less than 12-inch precipitation zones unless necessary to facilitate site preparation for restoration of greater sage-grouse habitat consistent with desired conditions in table 2. **GRSG-FM-ST-002-Standard** – In priority and general habitat management areas and sagebrush focal areas, if it is necessary to use prescribed fire to facilitate site preparation for restoration of greater sage-grouse habitat consistent with desired conditions in table 2, the associated NEPA analysis must identify how greater sage-grouse desired conditions would be met, why alternative techniques were not selected, and how potential threats to greater sage-grouse habitat would be minimized.

	prescribed fire activities are not in compliance with these protocols, the treatment would be considered a PHMA disturbance.	
117	Within sage-grouse PHMA, post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants (while controlling for erosion and treating infestation of invasive plant species), to return to suitable sage-grouse habitat.	See **GRSG-FM-ST-001-Standard** at MA #116.
118	Remove conifers encroaching into sagebrush habitats. Prioritize treatments closest to occupied sage-grouse habitats and near occupied leks, and where juniper encroachment is phase 1 or phase 2. Use of site-specific analysis and principles like those included in the FIAT report (Chambers et. al., 2014) and other ongoing modeling efforts to address conifer encroachment will help refine the location for specific priority areas to be treated.	**GRSG-GRSGH-GL-003-Guideline** – When removing conifers that are encroaching into greater sage-grouse habitat, avoid persistent woodlands (old growth relative to the site or more than 100 years old).
124	In sage-grouse PHMAs, and GHMAs, suppression would be a high priority and commensurate with values at risk. GHMAs would be assigned a priority commensurate with its importance in the local fire plan. Fire fighter and public safety would be the highest priority. Greater Sage-Grouse habitat would be prioritized commensurate with property values and other critical habitat to be protected, with the goal to restore, enhance, and maintain areas suitable for Greater Sage-Grouse. Within sage-grouse PHMAs (and PACs, if so determined by individual LUP efforts) would be the highest priority for conservation and protection during fire operations and fuels management decision making. The sage-grouse PHMAs (and PACs, if so determined by individual LUP efforts) would be viewed as more valuable than GHMAs when priorities are established. When suppression resources are widely available, maximum efforts would be placed on limiting fire growth in GHMA polygons as well. These priority areas will be further refined following completion of the Greater Sage-Grouse Landscape Wildfire and Invasive Species Habitat Assessments described in Appendix J.	**GRSG-FM-ST-003-Standard** - In priority and general habitat management areas and sagebrush focal areas suppress wildfire that moves habitat away from desired conditions in table 2.
	Wildlife and Fisheries Habitat Management	
1	Continue to support the development of statewide sage-grouse seasonal habitat models for the State of Wyoming.	
2	Field Offices and Ranger Districts will work with project proponents, partners, and stakeholders to avoid or minimize impacts and/or implement direct mitigation (e.g., relocating disturbance, timing restrictions, etc.), and utilize BMPs and off-site compensatory mitigation where appropriate.	
3	Utilize the Wyoming Sage-grouse Implementation Team (SGIT) and Local Working Group plans or other state or cooperatively-developed plans, analyses, and other sources of information to guide development of conservation objectives for local management of sage-grouse habitats. The BLM and Forest Service will collaborate with appropriate Federal agencies, and the State of Wyoming as contemplated under Governor Executive Order 2013-3, to: (1) develop appropriate conservation objectives; (2) define a framework for evaluating situations where Greater Sage-Grouse conservation objectives are not being achieved on Federal land, to determine if a causal relationship exists between improper grazing (by wildlife or wild horses or livestock) and Greater Sage-Grouse conservation objectives; and (3) identify appropriate site-based action to achieve Greater Sage-Grouse conservation objectives within the framework.	
	Monitoring Effectiveness	
125	The BLM, in coordination with the State of Wyoming and its agencies, other local partners and stakeholders, would establish monitoring framework (Appendix D) for sage-grouse populations and habitat that would be incorporated into individual project approvals, including small and in-house projects, as appropriate and necessary.	
	Density and Disturbance	

126	In sage-grouse PHMA (core only), the density of disturbance of an energy or mining facility (see Appendix I) would be limited to an average of one site per square mile (640 acres) within the DDCT, subject to valid existing rights. The one location and cumulative value of existing disturbances will not exceed 5 percent of suitable habitat of the DDCT area. Utilize the most current greater sage-grouse density disturbance process (Appendix J) or other state and/or federal agreed-upon process for compliance evaluations.	**GRSG-TDDD-ST-008-Standard –** In priority-PHMAs and sagebrush focal areas, limit the density of activities related to oil and gas development or mining activities to no more than an average of one facility or mining activity per 640 acres, using the current Density Disturbance Calculation Tool process described in Appendix I or its replacement, subject to valid existing rights.
127	Inside sage-grouse connectivity habitat, all suitable habitat disturbed (any program area) will not exceed 5% of suitable habitat within the DDCT area using the DDCT process described in Appendix I.	**GRSG-TDDD-ST-009-Standard** – In priority habitat management areas and sagebrush focal areas, do not permit surface disturbances and disruptive activities unless all existing discrete anthropogenic disturbances cover less than 5% of the suitable habitat in the surrounding area using the Density Disturbance Calculation Tool process or its replacement, as described in Appendix I. An exception to this standard is described in the Locatable Minerals section in GRSG-M-LM-ST-003-Standard.
	Onsite and Offsite Mitigation	
128	In undertaking BLM management actions, and, consistent with valid existing rights and applicable law, in authorizing third-party actions that result in habitat loss and degradation in PHMA, the BLM will require and ensure mitigation that provides a net conservation gain to the species including accounting for any uncertainty associated with the effectiveness of such mitigation. This will be achieved by avoiding, minimizing, and compensating for impacts by applying beneficial mitigation actions. When compensatory mitigation is required, the BLM, in coordination with the State of Wyoming and its agencies and partners, will ensure an essential nexus and rough proportionality exists between the residual impacts that warrant compensatory mitigation and the compensatory mitigation actions, as determined by the best available science. This essential nexus and rough proportionality will be clearly described in the NEPA analysis, decision document, and land use authorization for a land-use authorization application. For in-kind mitigation, focus should be given to the list below, as appropriate: 1. In-kind and onsite (on lease); 2. In-kind and offsite within the project's DDCT analysis area; 3. In-kind and off-site within the same PHMA boundary; 4. In-kind and adjacent to the affected PHMA within GHMAs; 5. In-kind and offsite within the same 2006 WAFWA Strategy determined Management Zone as the impact. In-kind mitigation is generally preferred to out-of-kind mitigation, although there may be exceptions, including where out-of-kind mitigation would be more effective for achieving BLM's resource, value, and function goals and objectives, as long as an essential nexus is maintained with the land use's impacts. Where in-kind mitigation provides no net benefit to sage-grouse, or where other habitat types are most limiting to populations, mitigation should focus on habitats that provide the greatest benefit to the species.	**GRSG-TDDD-GL-002-Guideline–** In-kind mitigation is preferred to out-of-kind mitigation. Where in-kind mitigation provides no net conservation gain to greater sage-grouse, or where other habitat types are most limiting to populations, mitigation should focus on habitats that provide the greatest benefit to the species. When approving mitigation requests, the following hierarchy should be considered: 1. Onsite (on lease). 2. Offsite within the project's DDCT analysis area. 3. Offsite within the same priority habitat management area or sagebrush focal area boundary. 4. Adjacent to the affected priority habitat management area or sagebrush focal area within the general habitat management area boundary. 5. Offsite within the same 2006 WAFWA Strategy determined Management Zone as the impact. 6. Other areas as identified by the local unit.
	Timing and Distance Restrictions	
129	**Sage-grouse leks inside PHMAs:**	**GRSG-TDDD-ST-001-Standard** – In priority habitat management areas and sagebrush focal areas do not authorize new surface occupancy or surface disturbing activities on or within a 0.6 mile

	Surface occupancy and surface disturbing activities would be prohibited on or within a 0.6 mile radius of the perimeter of occupied sage-grouse leks (Map 2-3). The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse.	radius of the perimeter of occupied leks that are located in priority habitat management areas and sagebrush focal areas.
130	**Sage-grouse leks outside PHMAs:** Surface occupancy and surface disturbing activities would be prohibited or restricted on or within a 0.25 mile radius of the perimeter of occupied sage-grouse leks (Map 2-3). The authorized officer may grant an exception if an environmental record of review determines that the action, as proposed or conditioned, would not impair the function or utility of the site for the current or subsequent seasonal habitat, life-history, or behavioral needs of Greater Sage-Grouse.	**GRSG-TDDD-ST-002-Standard** – In general habitat management areas, do not authorize new surface occupancy or surface disturbing activities on or within a 0.25 mile radius of the perimeter of occupied leks.
131	**Sage-grouse breeding, nesting, and early brood-rearing habitat inside PHMA (core only):** Surface disturbing and/or disruptive activities would be prohibited from March 15-–June 30 to protect sage-grouse breeding, nesting, and early brood rearing habitat. This timing limitation would be applied throughout the sage-grouse PHMA (core only) area habitats. Activities in unsuitable habitats would be evaluated under the exception, waiver, and modification criteria and could be allowed on a case by case basis. Where credible data support different timeframes for this seasonal restriction, dates could be shifted by up to 14 days prior to or subsequent to the above dates.	**GRSG-TDDD-ST-003-Standard** – In priority-PHMA habitat management areas and sagebrush focal areas, do not authorize new surface disturbing or disruptive activities from March 15 through June 30. Activities that meet the exception, waiver, and modification criteria may be authorized. Where credible data, based upon field analysis, support different timeframes for the seasonal restriction, dates may be shifted by up to 14 days before or subsequent to the above dates.
132	**Sage-grouse breeding, nesting, and early brood-rearing habitat inside PHMA (connectivity only):** Surface disturbing and/or disruptive activities would be prohibited within PHMA (connectivity only) from March 15–June 30 to protect breeding, nesting, and early brood-rearing habitats within 4 miles of the lek or lek perimeter of any occupied sage-grouse lek within identified connectivity areas. This timing limitation would be applied throughout the sage-grouse PHMA (connectivity only). Activities in unsuitable habitats would be evaluated under the exception, waiver, and modification criteria and may be allowed on a case-by-case basis. Where credible data support different timeframes for this seasonal restriction, dates could be shifted by 14 days prior or subsequent to the above dates.	**GRSG-TDDD-ST-004-Standard** – Within priority-connectivity habitat management areas, do not authorize new surface disturbing or disruptive activities from March 15 through June 30 within 4 miles of the lek or lek perimeter of any occupied lek within identified priority-connectivity areas. Activities that meet the exception, waiver, and modification criteria may be authorized. Where credible data, based upon field analysis, support different timeframes for this seasonal restriction, dates may be shifted by 14 days before or subsequent to the above dates.
133	**Sage-grouse breeding, nesting, and early brood-rearing habitat outside PHMAs:** Surface disturbing and/or disruptive activities would be prohibited from March 15–June 30 to protect sage-grouse nesting and early brood rearing habitats within 2 miles of the lek or lek perimeter of any occupied lek located outside PHMAs. Where credible data support different timeframes for this restriction, dates could be shifted by 14 days prior or subsequent to the above dates.	**GRSG-TDDD-ST-005-Standard –** In general habitat management areas, do not new authorize surface disturbing or disruptive activities from March 15 to June 30 within 2 miles of the lek or lek perimeter of any occupied lek located inside general habitat management areas. Activities that meet the exception, waiver, and modification criteria may be authorized. Where credible data, based upon field analysis, support different timeframes for this restriction, dates may be shifted by 14 days before or subsequent to the above dates.
134	**Sage-grouse winter concentration areas:** Surface disturbing and/or disruptive activities in mapped sage-grouse winter concentration areas would be prohibited from December 1–March 14 to protect PHMA (core only) populations	**GRSG-TDDD-ST-006-Standard** – Within mapped winter concentration areas in priority habitat management areas and sagebrush focal areas, do not authorize new surface disturbing or disruptive activities from December 1 through March 14 to protect

	of sage-grouse that use these winter concentration habitats. This timing limitation would be applied to all winter concentration areas within sage-grouse PHMA. Activities in unsuitable habitats within PHMAs would be evaluated under the exception, waiver, and modification criteria and could be allowed on a case-by-case basis. Protection of additional mapped winter concentration areas in GHMAs would be implemented where winter concentration areas are identified as supporting populations of sage-grouse that attend leks within PHMA (core only). Appropriate seasonal timing restrictions and habitat protection measures would be considered and evaluated in all identified winter concentration areas.	priority-PHMA habitat area and sagebrush focal area populations of greater sage-grouse that use these winter concentration habitats. Activities not located in suitable habitat that meet the exception, waiver, and modification criteria may be authorized. **GRSG-TDDD-ST-007-Standard** – Within mapped winter concentration areas in priority-connectivity and general habitat management areas, do not authorize new surface disturbing or disruptive activities from December 1 through March 14 where winter concentration areas are identified as supporting populations of greater sage-grouse that attend leks within priority-PHMAs and sagebrush focal areas.
	Predation	
135	The BLM would implement strategies and techniques in land management decisions that address predators shown to pose a threat to sage-grouse (Appendix F). The BLM would support and encourage other agencies in their efforts to minimize impacts from predators on sage-grouse where needs have been documented.	The Forest Service would implement strategies and techniques in land management decisions that address predators shown to pose a threat to sage-grouse (Appendix F). **GRSG-PR-GL-001-Guideline** – Efforts by other agencies to minimize impacts from predators on greater sage-grouse should be supported and encouraged where needs have been documented.
	Noise	
136	The BLM would work with proponents to limit project related noise where it would be expected to reduce functionality of habitats that support PHMA area populations. The BLM would evaluate the potential for limitation of new noise sources on a case-by-case basis as appropriate. BLM's near-term goal would be to limit noise sources that would be expected to negatively impact PHMA sage-grouse populations and to continue to support the establishment of ambient baseline noise levels for occupied PHMA leks. As additional research and information emerges, specific new limitations appropriate to the type of projects being considered would be evaluated and appropriate limitations would be implemented where necessary to minimize potential for noise impacts on sage-grouse PHMA population behavioral cycles. As new research is completed, new specific limitations would be coordinated with the WGFD and partners. Noise levels at the perimeter of the lek should not exceed 10 dBA above ambient noise.	**GRSG-TDDD-GL-001-Guideline** – During lekking (March 1 to May 15) anthropogenic disturbances, including noise at 10 dB above ambient (not to exceed 20-24 dB) to lekking birds, should be restricted from 6 pm to 9 am at a distance of 0.6 mile from the perimeter of an occupied lek.

Table 3. Seasonal Habitat Desired Conditions for Greater Sage- grouse.

ATTRIBUTE	INDICATORS	DESIRED CONDITION
AREAS MANAGED FOR BREEDING AND NESTING [1,2,3] (Seasonal Use Period March 15-June 30) Apply 5.3 miles from occupied leks. [4]		
Lek Security	Proximity of trees[5]	Trees or other tall structures are none to uncommon within 1.86 miles of leks[6,7]
	Proximity of sagebrush to leks[6]	Adjacent protective sagebrush cover within 328 feet of lek[6]
Cover	Seasonal habitat extent[7]	>80% of the breeding and nesting habitat
	Sagebrush canopy cover [6,7,8]	15 to 25%
	Sagebrush height[7] Arid sites[7,9]	8 to 32 inches in black sage and 12 to 32 inches in all other areas All Wyoming NFs: 16 to 32 inches

ATTRIBUTE	INDICATORS	DESIRED CONDITION
	Mesic sites[7,10]	
	Predominant sagebrush shape[6]	>50% in spreading[11]
	Perennial grass canopy cover [6, 7] Arid sites[6,7,9] Mesic sites[6,7,10]	 ≥10% ≥15%
	Perennial grass height[6,7,8]	Provide overhead and lateral concealment from predators[6]
	Perennial forb canopy cover [6,7,8] Arid sites[9] Mesic sites[10]	 ≥5%[6,7] ≥10%[6,7]
AREAS MANAGED FOR BROOD-REARING/SUMMER[1] (Seasonal Use Period July 1-November 30)		
	Seasonal habitat extent[7]	>40% of the brood-rearing/summer habitat
	Sagebrush canopy cover [6,7,8]	10 to 25%
	Sagebrush height[7,8]	8 to 20 inches in black sage and 12 to 32 inches in all other areas
	Perennial grass canopy cover and forbs [7,8]	>15%
Cover	Riparian areas/mesic meadows	Proper Functioning Condition [12]
	Upland and riparian perennial forb availability[6,7]	Preferred forbs are common with several preferred species present[13]
WINTER[1] (Seasonal Use Period December 1-March 14)		
	Seasonal habitat extent[6,7,8]	>80% of the winter habitat
	Sagebrush canopy cover above snow[6,7,8]	>10%
Cover and Food	Sagebrush height above snow[6,7,8]	>10 inches[14]

[1]Seasonal dates can be adjusted; that is, start and end dates may be shifted either earlier or later, but the amount of days cannot be shortened or lengthened by the local unit.

[2] Doherty, K. 2008. *Sage-grouse and Energy Development: Integrating Science with Conservation Planning to Reduce Impacts*. University of Montana. Missoula, MT.

[3] Holloran and Anderson. 2005. *Spatial Distribution of Greater Sage-grouse nests in relatively contiguous sagebrush habitats*. Condor 107:742-752.

[4] Buffer distance may be changed only if 3 out of 5 years of telemetry studies indicate the 5.3 miles is not appropriate.

[5] Baruch-Mordo, S. J.S. Evans, J.P Severson, D.E. Naugle, J. D. Maestas, J.M. Kiesecker, M.J. Falkowski. C.A. Hagen, and K.P. Reese. . 2013. *Saving sage-grouse from trees*: A proactive solution to reducing a key threat to a candidate species. Biological Conservation 167: 233-241.

[6] Stiver, S.J., E.T. Rinkes, D.E. Naugle, P.D. Makela, D.A. Nance, and J.W. Karl. In Press. *Sage-Grouse Habitat Assessment Framework: Multi-scale Habitat Assessment Tool. Bureau of Land Management and Western Association of Fish and Wildlife Agencies,* Technical Reference XXXX -X. U.S. Bureau of Land Management, Denver, Colorado. Submitted for publication.

[7] Connelly, J. M. A. Schroweder, A.R. Sands, and C.E. Braun.2000. Guidelines to manage sage-grouse populations and their habitats. Wildlife Society Bulletin 28 (4): 967-985.

[8] Connelly, J. K. Reese, and M. Schroder. 2003. *Monitoring of Greater sage-grouse habitats and populations*. Station Bulletin 80, Contribution 979. University of Idaho, College of Natural Resources Experiment Station. Moscow, ID.

[9] 10–12 inch precipitation zone; *Artemisia tridentata wyomingensis* is a common big sagebrush sub-species for this type site (HAF 2014).

[10] ≥12 inch precipitation zone; *Artemisia tridentata vaseyana* is a common big sagebrush sub-species for this type site (HAF 2014).

[11] Sagebrush plants with a spreading shape provide more protective cover than sagebrush plants that are more tree- or columnar shaped (HAF 2014).

[13] Existing land management plan desired conditions for riparian areas/wet meadows (spring seeps) may be used in place of properly functioning conditions, if appropriate for meeting greater sage-grouse habitat requirements.

[13] Preferred forbs are listed in HAF Table III-2 (HAF 2014). Overall total forb cover may be greater than that of preferred forb cover since not all forb species are listed as preferred in Table III-2.

[14] The height of sagebrush remaining above the snow depends upon snow depth in a particular year. Intent is to manage for tall, healthy, sagebrush stands.

Table 4. Grazing Guidelines for Greater Sage-grouse Seasonal Habitat.

Seasonal Habitat	Grazing Guidelines
Areas managed for breeding and nesting [1] within 5.3 miles of occupied leks	Perennial grass height: [2] When grazing occurs during breeding and nesting season (March 15 to June 30) manage for upland perennial grass height of: 7 inches [3,4,5,6] When grazing occurs post breeding and nesting season (July 1 to November 30) manage for 4 inches [4,5,8] of perennial grass height.
Areas managed for brood rearing and summer habitat[1]	Retain an average stubble height of 4 inches for herbaceous riparian/mesic meadow vegetation [7,9]
Winter [1]	<35% use of sagebrush

[1] For descriptions of Seasonal Habitat and Seasonal Periods of greater sage-grouse see table 1.
[2] Grass heights only apply in breeding and nesting habitat with ≥10% sagebrush cover to support nesting.
[3] Holloran et al. 2005. *Greater sage-grouse nesting habitat selection and success in Wyoming*.
[4] Average droop height, assuming current vegetation composition has the capability to achieve these heights. Heights will be measured at the end of the nesting period (Connelly, 2000).
[5] Hagen C., J.W. Connelly, and M.A. Schroeder. 2007. *A meta-analysis of greater sage-grouse Centrocercus urophasianus nesting and brood-rearing habitats*. Wildlife Biology 13(1): 42-50.
[6] Due to variability of annual precipitation and forage production 7"stubble height may not be possible every year, even in the absence of livestock grazing.
[7] Crawford et al. 2004. Ecology and Management of sage-grouse and sage-grouse habitat. "In riparian brood-rearing habitat, sage-grouse prefer the lower vegetation (5-15 cm (2-6 in) vs. 30-50 cm (12-20 in); Oakleaf 1971, Neel 1980, Klebenow 1982, Evans 1986) and succulent forb growth stimulated by moderate livestock grazing (Neel 1980, Evans 1986). "Moderate use equates to a 10-cm residual stubble height for most grasses and sedges."
[8] Stubble height to be measured at the end of the growing season.
[9] Stubble height to be measured in the meadow areas used by greater sage-grouse for brood-rearing (not on the hydric greenline).

6.0 Species Considered in the Analysis

This BA provides detailed analyses of all federally listed (endangered or threatened) species, proposed species, and designated or proposed critical habitat that may be affected by the actions proposed in the Amendment. Development of this BA was guided by the regulations on Interagency Cooperation (Section 7 of the ESA) in 50 CFR Part 402 and BLM Manual 6840 and additional interagency coordination with the U.S. Forest Service and U.S. Fish and Wildlife Service.

The following table (Table 3) lists the USFWS Threatened, Endangered, or proposed species that are being evaluated for this Biological Assessment (BA).

Table 3-USFWS endangered, threatened and proposed species and critical habitat potentially occurring in the analysis area and that may be influenced by the preferred alternative.

SPECIES (Status)	HABITAT DESCRIPTION and RANGE	Units in which the species in known or suspected to be present in the analysis area, and/or containing suitable or critical habitat in the analysis area									EVALUATION CRITERIA	INITIAL BIOLOGICAL DETERMINATION
		Bridger Teton	**Pinedale**	**Kemmerer**	**Rock Spring**	**Rawlins**	**Medicine Bow**	**Casper**	**Thunder Basin**	**Newcastle**		
Mammals												
Black-footed ferret **(Exp.)** ***Mustela nigripes***	All populations are experimental and are found in the Rawlins field office. They require established prairie dog towns for food and shelter (Hoffmeister 1986), which primarily occur in grassland and sagebrush habitats in Wyoming. Such areas are characteristic of prairie, grassland plains, and surrounding mountain basins up to 3,200 meters (10,500 ft.)					**X**			**X**			NE, NJ
Canada lynx **(T)** ***Lynx canadensis***	Montane and subalpine coniferous forests above 4,000 feet; lodgepole pine, subalpine fir and Engelmann spruce.	**X**	**X**			**X**	**X**					NE
Canada lynx **(*Lynx Canadensis*) critical habitat**	Montane and subalpine coniferous forests above 4,000 feet; lodgepole pine, subalpine fir and Engelmann spruce.	**X**	**X**			**X**	**X**					NE
Grizzly Bear (T) ***Ursus arctos horribilis***	Extensive forest cover often interspersed with grasslands and meadows. In Wyoming these	**X**	**X**	**X**								NE

	habitats are typically above 1,500 m (932 mi) (Schwartz et al. 2002).											
Preble's Meadow Jumping Mouse **(T)** ***Zapus hudonius preblei***	Species found in both riparian and grassland communities. They are found under debris at the base of shrubs and trees or in open grasslands.					**X**	**X**	**X**				NE
Northern Long-eared Bat **(Proposed T)** ***Myotis septentrionalis***	Species found primarily in coniferous or deciduous forests							**X**	*X*	*X*		NJ
Gray Wolf (Non-essential experimental)	habitat generalists and historically occupied most habitats in the Northern Hemisphere	**X**	**X**	**X**	**X**	**X**						NJ
Birds												

Least tern **(E)** ***Sterna antillarum***	The species does not occur in planning areas, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Piping plover **(T)** ***Charadrius melodus***	The species does not occur in planning areas, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Piping plover **(*Charadrius melodus*)** Critical habitat	The species does not occur in planning area, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Whooping crane **(E)** ***Grus Americana***	The species does not occur in planning area, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Whooping crane **(E)** ***Grus Americana*** Critical habitat	The species does not occur in planning area, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE

Western yellow-billed cuckoo **(T)** ***Coccyzus americanus***	Requires large blocks of riparian woodlands (50 acres/20 hectares or more) within low to moderate elevation arid to semiarid landscapes. It occurs in wetland areas throughout Wyoming.	*X*	*X*	*X*	*X*							NLAA
Western yellow-billed cuckoo **(T)** ***Coccyzus americanus***	Requires large blocks of riparian woodlands (50 acres/20 hectares or more) within low to moderate elevation arid to semiarid landscapes. It occurs in wetland areas throughout Wyoming.				*X*							NE
Fish												
Bonytail chub **(E)** ***Gila elegans***	*Gila elegan*s were generally found in pools and eddies in the absence of, although occasionally adjacent to, strong current and at varying depths generally over silt and silt-boulder substrates.											NE
Bonytail chub **(*Gila elegans*)** Critical habitat	Critical habitat includes Colorado River, Yampa River, Dinosaur National Monument west, Ruby Canyon west. The species does not occur in planning areas. However, Water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Humpback chub **(E)** ***Gila cypha***	The species does not occur in planning area, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Humpback chub **(*Gila cypha*) critical habitat**	Critical habitat includes Colorado River, Yampa River, Dinosaur National Monument west, Ruby Canyon west. The species does not											NE

	occur in planning areas. However, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											
Colorado pikeminnow **(E)** ***Ptychocheilus lucius***	The species does not occur in planning area, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Colorado pikeminnow **(*Ptychocheilus Lucius*)** Critical habitat	Critical habitat includes Colorado River, Yampa River, Dinosaur National Monument west, Ruby Canyon west. The species does not occur in planning areas. However, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Pallid sturgeon **(T)** ***Scaphirynchus albus***	Bottom-oriented, large river obligate fish inhabiting the Missouri and Mississippi rivers and some tributaries from Montana to Louisiana. The species does not occur in planning area, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Razorback sucker **(E)** ***Xyrauchen texanus***	The species does not occur in planning area, however, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches.											NE
Razorback sucker **(*Xyrauchen texanus*)** critical habitat	Critical habitat includes Colorado River, Yampa River, Dinosaur National Monument west, Ruby Canyon west. The species does not											NE

	occur in planning areas. However, water depletions in Wyoming may affect the species and/or critical habitat in downstream reaches											
Kendall Warm Springs Dace **(E)** ***Rhinichthys osculus thermalis***	*Kendall warm springs dace,* are confined to one stream approximately three hundred meters (328 yards) in length. It originates at a series of thermal springs near the base of a bluff. The springs flow southwest towards the Green River for a distance of 300m (984.25 ft.), before it cascades into the river over a travertine embankment.		**X**									NE
Amphibians												
Wyoming Toad **(E)** ***Bufo baxteri***	*Wyoming toad* habitat includes floodplain ponds, small ponds and lakes produced by irrigation runoff, and many small seepage lakes within the Laramie Basin. The range of Wyoming toad is restricted to the Laramie Basin.					**X**						NE
Blowout penstemon **(E)** ***Penstemon haydenii***	The plant's current known range in Wyoming consists of the Ferris Dunes area in northwest Carbon County, where the plant is restricted to two habitat types: steep, northwest facing slopes of active sand dunes with less than five percent vegetative cover; and north-facing sandy slopes on the lee side of active blowouts with twenty five to forty percent vegetative cover.					**X**		**X**				NLAA
Colorado Butterfly Plant **(T)- *Gaura***	The species is found in wetland habitats comprised of sub-irrigated, alluvial soils, around meandering					**X**		**X**				NLAA

neomexicana ssp. coloradensis	streams on level or slightly sloping floodplains and drainage bottoms. It is restricted to Laramie and Platte counties with ten percent being on State lands and three occurrences on Federal lands (USFWS 2004).												
Desert Yellowhead **(T)** ***Yermo xanthocephalus***	The species is found only in shallow deflation hollows in outcrops of Miocene sandstones and limestones of the Split Rock Formation at its junction with the White River Formation. The species is currently known from a single population of plants scattered over an area of 20 ha (50 ac). in Fremont County Wyoming.				**X**								NE
					Plants								
Ute ladies'-tresses **(T)** ***Spiranthes diluvialis***	Found in moist meadows associated with perennial stream terraces, floodplains, and oxbows; seasonally flooded river terraces; sub-irrigated or spring-fed abandoned stream channels and valleys; lakeshores; and human-modified.	**X**	**X**		**X**		**X**		**X**	**X**	**X**		NE
Western prairie fringed orchid **(T)** ***Platanthera praeclara***	North American tall grass prairie species found most often on unplowed, calcareous prairies and sedge meadows The species is not found in Wyoming. Upstream depletions to the Platte River system in Colorado and Wyoming may affect the species in Nebraska.												NE

6.1 Blowout Penstemon (*Penstemon haydenii*) - Endangered

Species/Habitat Description

Blowout penstemon (*Penstemon haydenii*) is a perennial herb, typically twelve inches or less in height, with six to ten groups of milky-blue to pale lavender flowers. *Penstemon haydenii* can be recognized by its large, milky-lavender flowers that smell faintly of vanilla and its blue-green, waxy foliage. Flowering plants have broad-based, clasping leaves that taper abruptly to a narrow tip, while vegetative plants have thin, grass-like leaves. Individual plants produce multiple stems that can survive burial in shifting, wind-blown sand. The plants occur only in sites with little competing vegetation or where strong winds have created depressions in the sand called "blowouts".

Historically, *Penstemon haydenii* was thought to be endemic to the Nebraska Sandhills. The Nebraska Sandhills is an extensive area with unique vegetation and soils.

In Wyoming, *Penstemon haydenii* is found in sparsely vegetated sandy blowouts in the early stages of plant community development composed of blowout grass (*Redfieldia flexuosa*), lemon scurf-pea (*Psoralidium lanceolatum*) and thickspike wheatgrass (*Elymus lanceolatus*) or Indian ricegrass (*Achnatherum hymenoides*). Shifting sand dunes are prevented from becoming fully stabilized and overgrown because of wind and gravity. The dunes may be sixty to one hundred twenty feet high on typically steep slopes with elevations between 1,768 and 2,286 meters (5,800 and 7,500 feet).

Life History

Budding for *Penstemon haydenii* occurs from early May through early June. Flowering occurs from mid-May through Mid-late June. Fruiting occurs from late May through early June.

Penstemon haydenii is a pioneer species. It is one of the first plants to establish itself on sand dunes at the base of mountains and ridges. In Wyoming, it blooms in June and is pollinated by insects. Twenty-six species of solitary bees and one bee-like wasp visit this plant in Wyoming, seeking both nectar and pollen rewards. Once pollinated, the flowers ripen into capsule-like fruits each containing twenty to thirty seeds. By summers end the seeds have matured and the capsules split open and release the seeds into the wind. Buried seeds remain viable and will only germinate after an ideally cool, moist spring. Once a plant germinates, it can live for several years but does not necessarily flower each year.

Status, Distribution and Designated or Proposed Critical Habitat

Penstemon haydenii was listed as an endangered species on September 1, 1987.

Historically *Penstemon haydenii* was a common plant in blowouts in the Nebraska sandhills (Pool 1914). With the encroachment of succeeding Sandhill prairie plants, the blowout penstemon is not able to compete.

The plant’s current known range in Wyoming consists of the Ferris Dunes area in northwest Carbon County, where the plant is restricted to two habitat types: steep, northwest facing slopes of active sand dunes with less than five percent vegetative cover; and north-facing sandy slopes on the lee side of active blowouts with twenty five to forty percent vegetative cover. Known populations in Wyoming are found between 2,036 to 2,268 m (6,680-7,440 ft.) in elevation. Systematic surveys are recommended in areas with sand blowout features at lower elevations (below 2,042 m or 6,700 ft.).

Threats

Penstemon haydenii was listed as an endangered species due to its small numbers and habitat limitations. It is believed that the direct cause of reduced habitat is due to fire control and livestock grazing practices. However, overgrazing of the sandhills caused the blowouts to occur creating better habitat for the species. With better management practices which include more controlled grazing and fire protection measures, competing vegetation is allowed to become established (73 FR 58261, October 6, 2008).

Drought conditions have also been thought to contribute to the decline of *Penstemon haydenii* population numbers. The lack of moisture discourages the development of the seeds and promotes a prolonged dormant stage. Also, the larvae of the pyralid moth, which bores into the stem and root crowns of the plant has been known to cause a seventy five percent mortality rate in affected plants.

6.2 Colorado Butterfly Plant (*Gaura neomexicana var. coloradensis*) - Threatened

Species/Habitat Description

Gaura neomexicana ssp. coloradensis (Colorado butterfly plant) is a member of the Evening primrose family (*Onagraceae*). The members of this family are characterized by having flowers with four petals that are joined at the base into a slender tube located above the seed-producing stem. *Gaura neomexicana ssp. coloradensis* is a perennial plant that generally lives an average of two to six years. Characteristically the plants are 45 to 60 centimeters (18 to 24 inches) tall with leaves in excess of 3.8 cm (one and a half in) long.

Gaura neomexicana ssp. coloradensis have a single to multiple reddish, hairy stem(s) that measure 50 to 80 cm (two to three ft.) tall. The lower leaves of the plant are lance-shaped with smooth or wavy-toothed margins and range from five to 15 cm (two to six in.) in length, while those on the stem are smaller and less abundant. The flowers are bilaterally symmetrical and similar in shape to the hind and fore wings of a butterfly. The flowers consist of four reddish sepals and four white petals that will first appear white but as the plant ages the flowers will become pink (Heidel 2008). The individual flowers are typically five to 14 millimeters (0.25 to 0.5 in). Only a few flowers are open at any given time. Flowers are assembled in a branched, elongate inflorescence above the leaves. Flowers are found below the rounded buds and above the mature fruits of the plant. The hard, nutlike fruits are four-angled and do not have a stalk. Non-flowering plants consist of a stem-less, basal rosette of oblong, hairless leaves three to 18 cm (one to seven in) long (Marriott 1987; Fertig 1994; Fertig et al. 1994; Fertig 2000, 2000, 2001).

Gaura neomexicana ssp. Coloradensis is generally found in wetland habitats comprised of sub-irrigated, alluvial soils. The common place to find the plant is around meandering streams on level or slightly sloping floodplains and drainage bottoms. Typically the plants occur in the high plains at 1,524 to 1,951 m (5,000 to 6,400 ft.) *Gaura neomexicana ssp. coloradensis* requires early to mid-succession riparian habitat generally among native grasses such as *Agrostisstolonifera* (red top) and *Poa pratensis* (Kentucky bluegrass) on wetter sites; and *Glycyrrhiza lepidota* (wild licorice), *Cirsium flodmanii* (Floodman's thistle), *Grindelia squarrosa* (curlytop gumweed) and *Equisetum laevigatum* (smooth scouring rush) on drier sites. This plant prefers open habitat not obstructed by other overgrown vegetation characteristic of places that have been disturbed in recent years.

Life History

Gaura neomexicana ssp. coloradensis is a short lived, perennial herb that flowers from late June to late September or early October (Heidel 2008). Fruits begin to mature in late July and will continue to develop through September (Fertig 1994). Colorado butterfly plant reproduces entirely by seed.

The herb lives vegetatively in a basal root for several years before it will begin bearing fruit, which it does once and then dies. Moths are thought to be the primary pollinators, with pollination occurring in late evening or during the night. Individual plants may produce 143-383 fruits, each containing 1-4 seeds (Mountain West Environmental Services 1985; Munz 1938). Population growth rates are based on seedling establishment and rosette maturity which is dependent on summer precipitation (Marriot et.al 1988; Floyd 1995a; Fertig 1996, 1997, 1998a, 1998b; Floyd and Ranker 1998). The vegetative rosettes are capable of producing a stable population through rough climatic years when seedling establishment may be reduced. Years of ideal climate may produce episodic establishment of large seedling recruitment classes which may be important for the long term growth, replenishment and survival of populations (Floyd and Ranker 1998).

Status, Distribution and Designated or Critical Habitat

Gaura neomexicana ssp. coloradensis was listed as a threatened species on October 24th 1998. *Gaura neomexicana ssp. Coloradensis* occurs in southeastern Wyoming, north central Colorado, and extreme western Nebraska, mostly on private lands. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. Annual monitoring of these populations by Wyoming Natural Diversity Database has continued for the past twenty years and is ongoing (Heidel 2005).

On January 11, 2005, seven units in Wyoming were designated as critical habitat for *Gaura neomexicana .ssp. coloradensis* (70 FR 1940). The units are: 1) Tepee Ring Creek; 2) Bear Creek East; 3) Bear Creek West; 4) Little Bear Creek/Horse Creek; 5) Lodgepole Creek West; 6) Lodgepole Creek East; and 7) Borie.

The final designation of critical habitat for *Gaura neomexicana .ssp. coloradensis* included the following critical habitat primary constituent elements: 1) Sub-irrigated, alluvial soils on level or low-gradient floodplains and drainage bottoms at elevations of 1,524 to 1,951 meters (5,000 to 6,400 feet); 2) A mesic moisture regime, intermediate in moisture between wet and dry, streamside communities dominated by sedges, rushes, cattails, and dry upland shortgrass prairie; 3) Early- to mid-succession riparian (streambank or riverbank) plant communities that are open and without dense or overgrown vegetation (including hayed fields that are disked every 5 to 10 years at a depth of 20 to 30 centimeters (8 to 12 inches), grazed pasture, other agricultural lands that are not plowed or disked regularly, areas that have been restored after past aggregate extraction, areas supporting recreation trails, and urban/wildland interfaces); and 4) Hydrological and geological conditions that maintain stream channels, floodplains, floodplain benches, and wet meadows that support patterns of plant communities associated with *Gaura neomexicana .ssp. coloradensis* (65 FR 62302, January 11, 2005).

Threats

Threats that affect *Gaura neomexicana ssp. coloradensis* are the use of non-selective broadleaf herbicides, mowing and haying and the channelization and fragmentation of waterways. *Gaura neomexicana ssp. coloradensis* also needs disturbances to open ground for them to succeed. In the past, flooding was the main disturbance that created and sustained open habitat for *Gaura neomexicana ssp. coloradensis* to establish and flourish. Wildfire and grazing have historically opened areas up for the growth of *Gaura neomexicana ssp. coloradensis*. The most serious threats are competition from non-native plants or replacement of early successional vegetation, and conversion of rangelands for crop agriculture or urban expansion (Fertig 1998b; 2000; Munk 1999).

6.3 Desert yellowhead (*Yermo xanthocephalus*) – Threatened

Species/Habitat Description

Yermo xanthocephalus (Desert yellowhead) is a tap-rooted, glabrous (hairless) perennial herb with leafy stems to 30 cm (12 in) high. The leathery leaves are alternate, lance-shaped to oval, four to 25 cm (1.5 to ten in) long and often folded along the midvein. Leaf edges are smooth or toothed. Flower heads are many (25 to 180) and crowded at the top of the stem. Each head contains four to six perfect yellow disk flowers (ray flowers are absent) surrounded by four to six yellow, keeled involucral bracts (modified leaves below flower head). The pappus (ring of hairs) on the achenes (seeds) consists of many white capillary bristles (Dorn 1991; Dorn 2001; Dorn 2006).

The species is found only in shallow deflation hollows in outcrops of Miocene sandstones and limestones of the Split Rock Formation at its junction with the White River Formation (Van Houten 1964; Love 1961). The hollows are known to accumulate drifting snow and may be more moist than surrounding areas. The vegetation at these sites are typically sparse, consisting of low cushion plants and scattered clumps of *Oryzopsis hymenoides* (Indian ricegrass) (Fertig 1995).

Life History

Yermo xanthocephalus usually flowers from mid-June to August and may prolong flowering, or flower for a second time in September (Heidel 2002). The growing season has an average of 124 days (Scott and Scott 2009). This species is pollinated by visually-oriented insects which are attracted to its bright disk flowers and bracts (Dom 1991). Ants and nectar-feeding butterflies were noted as frequent visitors to desert yellowhead flowers (Heidel et al. 2011).

Yermo xanthocephalus is a long-lived perennial that produces sexually by seed and possibly asexually by vegetative buds. Yermo xanthocephalus is pollinated by visually-oriented insects attracted to its bright disk flowers and bracts (Dorn 1991).

Status, Distribution and Designated or Proposed Critical Habitat

Yermo xanthocephalus was listed as a threatened species on September 24 1997. On March 16, 2004 (69 FR 12278-12290), critical habitat was designated for *Yermo xanthocephalus* in Fremont County, Wyoming. The designated critical habitat is approximately 146 hectares (360 acres) of Federal lands managed by BLM in the Beaver Rim area.

Yermo xanthocephalus is currently known from a single population of plants scattered over an area of 20 ha (50 ac). Originally, Dorn (1991) estimated that there were approximately 500 plants within 1 ha (2.5 ac); however, this was only a visual estimate. Plant communities associated with *Yermo xanthocephalus* include, but are not be limited to, sparsely-vegetated cushion plant communities with scattered clumps of *Oryzopsis hymenoides* (Indian rice grass) between 2,043 and 2,073 m (6,700 and 6,800 ft.) in Fremont County Wyoming.

The desert yellowhead has approximately 146 ha (360 ac) of designated critical habitat which occurs in Fremont County Wyoming. The critical habitat occurs entirely on land managed by the Bureau of Land Management in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. The primary constituent elements for Desert yellowhead consist of, but are not limited to:

- Recent soils derived from sandstones and limestones of the Split Rock Formation at its junction with the White River Formation. These are shallow, loamy soils of the Entisol order that can be classified as coarse-loamy over sandy-skeletal, mixed, Lithic Torriorthent. The surface stratum

has little organic matter and subsurface layers show no accumulation of humus, clay, gypsum, salts, or carbonates.

- Plant communities associated with desert yellowhead include, but may not be limited to, sparsely vegetated cushion plant communities with scattered clumps of *Oryzopsis hymenoides* (Indian ricegrass) between 2,043 and 2,073 m (6,700 and 6,800 ft.) in Fremont County, Wyoming. Species common to these communities include *Arenaria hookeri* (Hooker's sandwort), *Astragalus kentrophyta* (thistle milkvetch), *Hymenoxys acaulis* (stemless hymenoxy), and *Phlox muscoides* (squarestem phlox). These cushion-plant communities also contain natural openings.
- Topographic features/relief (outcroppings, cliffs, and hills) and physical processes, particularly hydrologic processes, that maintain the shape and orientation of the hollows characteristic of *Yermo xanthocephalus* habitat (through microscale dynamics of local winds and erosion) and maintain moisture below the surface of the ground (through sheet wash from the adjacent outcroppings, cliffs, and hills). (Federal Register / Vol. 69, No. 51 / Tuesday, March 16, 2004 / Rules and Regulations).

Threats

Yermo xanthocephalus has a small population size and a restricted distribution which inherently makes it vulnerable to catastrophic events. The entire known range of *Yermo xanthocephalus* occurs on 20 ha (50 ac) in southern Fremont County, Wyoming. When *Yermo xanthocephalus* was first listed, oil and gas development was the most severe and immediate threat to the species through potential habitat destruction. In addition, habitat destruction by domestic livestock and native ungulates, the tires of vehicles during illegal use of the area and foot traffic of humans visiting the area may cause damage to plants and habitat through the crushing of plants, destruction of seeds, and compaction or erosion of soil.

Researchers have also found that flowering levels decline in drought years. They have also found that *Yermo xanthocephalus* seeds have capacity for wind dispersal. Water erosion also appears to influence distribution patterns (Heidel 2002). Fertig (1995) characterized the species as being adaptable to severe habitats and having low annual reproductive output.

6.4 Ute Ladies' -tresses (*Spiranthes diluvialis*) - Threatened

Species/Habitat Description

Spiranthes diluvialis, or commonly known as the Ute ladies'-tresses is a perennial orchid (family Orchidaceae). The orchid first appears above ground as a rosette of thickened grass-like leaves that is very difficult to distinguish from other vegetation. Its leaves are up to 1.5 cm (0.6 in) wide and 28 cm (11 in) long; the longest leaves are near the base. The usually solitary flowering stem is 20 to 50 cm (eight to 20 in) tall, terminating in a spike of three to fifteen white or ivory flowers.

Spiranthes diluvialis occurs in soils moist at the surface throughout the growing season. Soils are generally silty-loam often underlain with cobble and gravel. The habitat settings are: early to mid-successional riparian habitats (i.e. well established soils and vegetation) along perennial streams and rivers such as moist stream edges, high flow channels, old oxbows, vegetated point bars, and other fluvial features with appropriate hydrology; and areas supported by groundwater and sometimes supplemented by irrigation water, such as wet meadows and springs (Fertig *et al.* 1994; USFWS 1995; Fertig 2000; 57 FR 2048). *Spiranthes diluvialis* appears to be well adapted to disturbance caused by water movement through flood plains as well.

Besides hydrology, common habitat features include dominance by perennial graminoids and forbs and low vegetative cover. Where colonies occur in more wooded areas, plants are usually found on the edges of small openings and along trails (Ward and Naumann 1998). *Spiranthes diluvialis* is intolerant of crowding and competition. The orchid may persist for some time in the grassy understory of these woody riparian shrublands, but do not appear to thrive under these conditions (Ward and Naumann 1998).

Life History

Flowering of *Spiranthes diluvialis* occurs from mid-July through August. However, in some locations it may bloom in early July or may still be in flower as late as early October. Some individuals remain under ground or do not flower each year (Arft 1993).

Because of the unique anatomy of orchid flowers, only certain insects can accomplish pollination. Reproduction of the Ute ladies'-tresses orchid is strictly sexual, with bumblebees *(Bombus* spp.) and anthophorans (*Anthophora* spp.) (Sipes and Tepedino 1995) as the primary pollinators. These insects visit the orchids for the nectar and pollination is accomplished incidentally.

Status, Distribution and Designated or Proposed Critical Habitat

The Ute ladies'-tresses (*Spiranthes diluvialis*) was federally listed as threatened on January 17, 1992 (57 FR 2048) in its entire range. No critical habitat has been designated for the species. To date, no recovery plan has been approved for this species. However, a draft recovery plan has been written (USFWS 1995).

In Wyoming, *Spiranthes diluvialis* typically occurs on the eastern plains in moist valley bottoms where small perennial rivers and streams are fed by ground water.

Threats

Factors that could affect *Spiranthes diluvialis* include natural or human-directed disturbances, such as the modification of the hydrology, increased recreation use, introduction or proliferation of invasive species, improper herbicide use, reduction or loss of pollinators and improper season and stocking rate of livestock grazing (USFWS 1995). Also, hay mowing, or fire, may hinder maintaining habitat in suitable condition for the orchid by reducing cover, litter, and weeds, especially when these occur during the flowering period (Arft 1995; Moseley 1998).

Many *Spiranthes diluvialis* locations are in more mountainous or rural locations and are not as susceptible to the direct effects of urban development; however, some scattered locations are subject to rural development such as gravel pit excavations, irrigation diversions, and construction of irrigation canals, roads and bridges. Channelization of waterways and construction of levees that isolate a stream from its floodplain prevent formation and maintenance of suitable habitat (USFWS 2003). It also eliminates periodic disturbances that remove competitive shrub stands which also re-saturates and rejuvenates old and new habitats (Moseley 1998; Fertig 2000; USFWS 2003).

Recreational development may cause either direct (placing trails or campgrounds in occupied or suitable habitat) or indirect (changes in hydrology, spread of invasive species) impacts to *Spiranthes diluvialis* (USFWS 2003). Campground facilities, road and parking lot construction and improvements, trails, and fisheries improvements result in increased access to and use of riparian and wetland areas that support *Spiranthes diluvialis*. Water-related activities are a common concern for continued viability of *Spiranthes diluvialis* throughout Wyoming as well (USFWS 2003).

A newly emerging and potentially serious threat to the orchid range wide is the proliferation of invasive native and non-native plant species. *Spiranthes diluvialis* is susceptible to below-ground competition, such as from strongly rhizomatous species, or above-ground competition that reduces light such as taller trees and shrubs. Tamarisk is of particular concern as it readily invades newly formed habitat before *Spiranthes diluvialis* can become established, is extremely competitive and may change soil surface chemistry through deposition of salty leaf litter. Management of invasive species, while a high priority for many agencies and those in the public, requires a high and continuous investment in labor and other resources in order to achieve success. This effort is often difficult to sustain over time.

6.5 Western prairie-fringed orchid (*Platanthera praeclara*)-Endangered

Species/Habitat Description
Platanthera praeclara, the Western prairie fringed orchid is distinguished by its large flowers (up to 1 ½ inches in length), large angular column, and broadly triangular petals. The lateral lobes of the lip on the western species are often, but not always, narrower than those on the eastern species. *Platanthera praeclara* is a stout, erect, long-lived perennial with a showy open raceme (spike) of up to two dozen white to creamy white flowers often an inch or more in size, each with a long nectar spur. The sepals of the orchid are tinged with pale green. The lip, or lower petal, of each flower, is deeply three-lobed and fringed. The single smooth stem can grow from two and a half to four feet tall. There are two to five simple elongate leaves which are thick and hairless.

Platanthera praeclara occurs most often in remnant native prairies and meadows. It has also been observed at disturbed sites such as oil fields and roadside ditches. In the southern part of its range it is more likely to be found in mesic upland prairies and in the north in wet prairies and sedge meadows. It is also known from prairies and swales in sand dune complexes that are fed by shallow underground water.

Life History
Platanthera praeclara is a long-lived perennial. It emerges in May and blooms in June through July in the Northern parts of its range. *Platanthera praeclara* is a plant of the tall grass prairie and requires direct sunlight for growth. The flowers are fragrant at night and are pollinated by large sphinx moths, which is required for seed set. Any threat to these insects, such as the use of insecticides, is a threat to the *Platanthera praeclara*.

Status, Distribution and Designated or Proposed Critical Habitat
On September 28, 1989, *Platanthera praeclara* was classified as endangered under the endangered species act of 1973 as amended.

The Western prairie fringed orchid (*Platanthera praeclara*) is known to occur in seven states and one Canadian province. It was first documented by the Lewis and Clark expedition. The species historic range extends from the Red River valley of Manitoba, Minnesota, and North Dakota, spreading southeastward to Iowa and Missouri and westward to northeastern Oklahoma, eastern Kansas, central Nebraska and eastern South Dakota. (Sather 1991).

Platanthera praeclara is not known to occur in Wyoming. As the species requires the maintenance of functional and dynamic tallgrass prairie, it is unlikely that the species will ever be found to occur within the State. The potential for effects is limited to depletion issues surrounding the Platte River drainage basin though no critical habitat is designated for this species.

Threats
Because the species does not occur in the state of Wyoming, threats to the species within the state would only occur from water depletions. Since 1978, the FWS has consistently found through formal section 7 consultations with Federal agencies that actions resulting in depletions to flows in the Platte River system are likely to jeopardize the continued existence of one or more federally-listed threatened or endangered species and adversely modify critical habitat (Instruction Memorandum No. WY-2007-039).

6.6 Bonytail (*Gila elegans*) - Endangered

Species/Habitat Description
Gila elegans, the bonytail, are medium-sized (less than 600 mm or 23.62 in) fish in the minnow family. Adult *Gila elegans* are gray or olive colored on the back with silvery sides and a white belly. The adult *Gila elegans* have an elongated body with a long, thin caudal peduncle. The head is small and compressed compared to the rest of the body. The mouth is slightly overhung by the snout and there is a smooth low hump behind the head that is not as pronounced as the hump on a humpback chub.

Vanicek (1967) reported that *Gila elegan*s were generally found in pools and eddies in the absence of, although occasionally adjacent to, strong current and at varying depths generally over silt and silt-boulder substrates. Adult *Gila elegans* are sympatric with humpback chub in shoreline eddies among emergent boulders and cobble, and adjacent to swift current (Valdez 1990). The diets of *Gila elegans* are presumed similar to that of the humpback chub (USFWS 2002).

Life History
Gila elegans are considered a species that is adapted to main stem rivers because it has been observed in pools and eddies (Vanicek 1967; Minckley 1973). Spawning of *Gila elegans* has never been observed in a river, but ripe fish were collected in Dinosaur National Monument in Utah during late June and early July suggesting that spawning occurred at water temperatures of about eighteen degrees Celsius (64.4 degrees Fahrenheit) (Vanicek and Kramer 1969). Similar to other closely related *Gila* species, bonytail probably spawn in rivers in spring over rocky substrates; spawning has been observed in reservoirs over rocky shoals and shorelines. It has been recently hypothesized that flooded bottomlands may provide important *Gila elegans* nursery habitat.

Status, Distribution and Designated or Proposed Critical Habitat
Gila elegans was first listed as endangered on April 23, 1980 (45 FR 27710). It is currently designated as endangered throughout its entire range.

Currently, no documented self-sustaining populations exist in the wild. Formerly reported as widespread and abundant in main stem rivers (Jordan and Evermann 1896), its populations have been greatly reduced. Remnant populations presently occur in the wild in low numbers (USFWS 2002). The species is not known to occur in Wyoming, However, the species is included in the document because management actions in Wyoming may affect critical habitat for the species by extension through water depletions.

Threats
The primary threats to *Gila elegans* are stream flow regulation and habitat modification; also, competition with and predation by nonnative fishes; hybridization with other native *Gila* species; poor land-use practices, degraded water quality, pesticides, and pollutants (USFWS 2002). The

existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering. Threats to *Gila elegans* in relation to hybridization are essentially the same threats identified for humpback chub. *Gila elegans* were extirpated in some areas primarily because of rotenone poisoning and cold-water releases from dams (USFWS 2002).

6.7 Colorado pikeminnow (*Ptychocheilus lucius*) - Endangered

Species/Habitat Description

Ptychocheilus lucius, the Colorado pikeminnow or squawfish, are the largest cyprinid fish (minnow family) native to North America. It is an elongated pike-like fish that during pre-development times may have grown as large as six feet in length and weighed nearly one hundred pounds (Behnke and Benson 1983). Today, *Ptychocheilus lucius* rarely exceed three feet in length or weigh more than 18 pounds; such fish are estimated to be forty-five to fifty-five years old (Osmundson et al. 1997). The mouth of this species is large and nearly horizontal with long slender pharyngeal teeth (located in the throat), adapted for grasping and holding prey. Adults are strongly counter shaded with a dark, olive back, and a white belly. Young *Ptychocheilus lucius* are silvery and usually have a dark, wedge-shaped spot at the base of the caudal fin.

Ptychocheilus lucius are long-distance migrators. They live in warm-water reaches of river main stems and larger tributaries, and require uninterrupted stream passage for spawning migrations and dispersal of young. The species is adapted to a hydrologic cycle characterized by large spring peaks of snow-melt runoff and low, relatively stable base flows (Junk *et al.* 1989; Johnson *et al.* 1995). *Ptychocheilus lucius* use relatively deep, low-velocity eddies, pools, and runs that occur in near-shore areas of main river channels (Tyus and McAda 1984; Valdez and Masslich 1989; Tyus 1990, 1991; Osmundson *et al.* 1995). In spring, *Ptychocheilus lucius* use floodplain habitats, flooded tributary mouths, flooded side canyons, and eddies that are available only during high flows (Tyus 1990, 1991; Osmundson *et al.* 1995). Gravel and cobble deposits are usually found in the habitat to be used for spawning.

Life History

The diet of *Ptychocheilus lucius* longer than 7.6 to 10.2 cm (three to four in) consists almost entirely of other fish. (Vanicek and Kramer 1969). Males become sexually mature earlier and at a smaller size than do females, though all are mature by about age 7 and 500 mm (20 in) in length (Vanicek and Kramer 1969; Seethaler 1978; Hamman 1981).

Ptychocheilus lucius are long-distance migrators; adults move hundreds of miles to and from spawning areas, and require long sections of river with unimpeded passage. Adults require pools, deep runs, and eddy habitats maintained by high spring flows. High spring flows provide an important cue to prepare adults for migration (Harvey *et al.* 1993). These high spring flows maintain channel and habitat diversity, flush sediments from spawning areas, rejuvenate food production, form gravel and cobble deposits used for spawning, and rejuvenate backwater nursery habitats.

Spawning occurs in the *Ptychocheilus lucius* after spring runoff at water temperatures typically between eighteen and twenty three degrees Celsius (64.4°F and 73.4°F). It has occurred as early as June 15th in some years and as late as August 15th. Although direct observation of *Ptychocheilus lucius* spawning is not possible, in one study, radio telemetry indicated spawning may occur over cobble-bottomed riffles (Tyus 1990).

Known spawning sites are also in canyon-bound reaches (McAda 2000). Because of their mobility and environmental tolerances, adult *Ptychocheilus lucius* are more widely distributed than other life stages. Distribution patterns of adults are stable during most of the year (Tyus 1990, 1991; Irving and Modde 2000), but distribution of adults change in late spring and early summer due to migration to spawning (Tyus and McAda 1984; Tyus 1985, 1990, 1991; Irving and Modde 2000).

After hatching and emerging from the spawning substrate, *Ptychocheilus lucius* larvae drift downstream to backwaters in sandy, alluvial regions, where they remain through most of their first year of life (Holden 1977; Tyus and Haines 1991; Muth and Snyder 1995). Backwaters and the physical factors that create them are vital to successful recruitment of early life stages of *Ptychocheilus lucius*. It is important to note that these backwaters are formed after cessation of spring runoff within the active channel and are not floodplain features. *Ptychocheilus lucius* larvae occupy these in-channel backwaters soon after hatching. They tend to occur in backwaters that are large, warm, deep (average, about 0.3 m or 1 foot in the Green River), and turbid (Tyus and Haines 1991). Recent research (Day *et al.* 1999a, 1999b; Trammell and Chart 1999) has confirmed these preferences and suggested that a particular type of backwater is preferred by *Ptychocheilus lucius* larvae and juveniles.

Status, Distribution and Designated or Proposed Critical Habitat

The *Ptychocheilus lucius* was first listed on March 11, 1967 (32 FR 4001). Full protection under the Act of 1973 occurred on January 4, 1974. It is currently designated as endangered throughout its range, except in the Salt and Verde River drainages in Arizona. Based on early fish collection records, archaeological finds, and other observations, the *Ptychocheilus lucius* was once found throughout warm water reaches of the entire Colorado River Basin down to the Gulf of California, and including reaches of the upper Colorado River and its major tributaries, the Green River and its major tributaries, and the Gila River system in Arizona (Seethaler 1978). *Ptychocheilus lucius* have never been found in colder, headwater areas.

Major declines in *Ptychocheilus lucius* populations occurred during the dam-building era of the 1930s through the 1960s. Behnke and Benson (1983) summarized the decline of the natural ecosystem, pointing out that dam, impoundments, and water use practices drastically modified the river's natural hydrology and channel characteristics throughout the Colorado River Basin. Dams on the main stem broke the natural continuum of the river ecosystem into a series of disjunct segments, blocking native fish migrations, reducing temperatures downstream of dams, creating lacustrine habitat, and providing conditions that allowed competitive and predatory nonnative fishes to thrive both within the impounded reservoirs and in the modified river segments that connect them. This has reduced the ideal habitat of the species. The highly modified flow regime in the lower basin coupled with the introduction of nonnative fishes decimated populations of native fish.

No self-sustaining populations of this species are currently known to exist in Wyoming. No recent sightings have been reported in Wyoming. However, in 1988, an individual was captured from the Little Snake River in Wyoming, which is a tributary to the Yampa River in Colorado where populations are known to exist. Management actions that involve water depletions in Wyoming may affect critical habitat for the species in states located downstream.

Threats

The primary threats to *Ptychocheilus lucius* are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; and pesticides and pollutants (USFWS 2002). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential

behavior patterns, such as breeding, feeding, and sheltering. These impairments are described in further detail below. Data collected by Osmundson and Kaeding (1991) indicated that during low water year's nonnative minnows capable of preying on or competing with larval endangered fishes greatly increased in numbers.

Threats from pesticides and pollutants include accidental spills of petroleum products and hazardous materials; discharge of pollutants from uranium mill tailings; and high selenium concentration in the water and food chain (USFWS 2002). Accidental spills of hazardous material into critical habitat can cause immediate mortality when lethal toxicity levels are exceeded. Pollutants from uranium mill tailings cause high levels of ammonia that exceed water quality standards. High selenium levels may adversely affect reproduction and recruitment (Hamilton and Wiedmeyer 1990; Stephens et al. 1992; Hamilton and Waddell 1994; Hamilton *et al.* 1996; Stephens and Waddell 1998).

6.8 Humpback Chub (*Gila cypha*) - Endangered

Species/Habitat Description

Gila cypha, the humpback chub, is a medium-sized freshwater fish (less than 500 mm or 19.7 in) of the minnow family. The adults have a pronounced dorsal hump, a narrow flattened head, a fleshy snout with an inferior-subterminal mouth, and small eyes. It has silvery sides with a brown or olive colored back.

Backwaters, eddies, and runs have been reported as common capture locations for young-of-year *Gila cypha* (Valdez and Clemmer 1982). Data indicates that young utilize shallow areas. Habitat suitability index curves developed by Valdez *et al.* (1990) indicate young-of-year prefer average depths of 0.64 m (2.1 ft.) with a maximum of 1.55 m (5.1 ft.). Average velocities were reported at 0.06 meters per second (0.2 feet per second). Valdez et al. (1982), Wick et al. (1979), and Wick et al. (1981) found adult *Gila cypha* in water averaging fifty feet in depth with a maximum depth of ninety two feet. In these localities, humpback chub were associated with large boulders and steep cliffs. Gorman and Stone (1999) reported that ripe male *Gila cypha* aggregated in areas of complex habitat structure (i.e., matrix of large boulders and travertine masses combined with chutes, runs, eddies, 0.5–2.0 m deep) and were associated with deposits of clean gravel. Generally, *Gila cypha* show fidelity for canyon reaches and move very little (Miller *et al.* 1982; Archer *et al.* 1985; Burdick and Kaeding 1985; Kaeding *et al.* 1990). Tyus and Karp (1989) reported that *Gila cypha* occupy shoreline eddy habitats. They also reported that spring peak flows were important for reproductive success because availability of these habitats is greatest during spring runoff.

Life History

Tyus and Karp (1991) found that *Gila cypha* spawn during spring and early summer following peak flows at water temperatures of about twenty degrees Celsius (68°F). They estimated that the spawning period for humpback chub ranges from May into July, with spawning occurring earlier in low-flow years and later in high-flow years; spawning was thought to occur only during a four to five week period (Karp and Tyus 1990). Peak hatch of *Gila* larvae occur on the descending limb of the hydrograph following spring runoff at maximum daily water temperatures of approximately 20 to 21°C (68 to 69.8°F) (Chart and Lentsch 1999). Although *Gila cypha* are believed to broadcast eggs over mid-channel cobble and gravel bars, spawning in the wild has not been observed for this species.

Gila cypha do not make extensive migrations (Karp and Tyus 1990). In some areas the *Gila cypha* were essentially restricted to a 1.6 km (1 mi) reach. These results were based on the recapture of

Carlin-tagged fish and radio telemetry studies conducted from 1979 to 1981 (Valdez et al. 1982) and 1983 to 1985 (Archer et al. 1985; USFWS 1986; Kaeding et al. 1990).

Chart and Lentsch (1999) estimated hatching dates for young *Gila* between 1992 and 1995. They determined that hatching occurred on the descending limb of the hydrograph as early as 9 June 1992 at a flow of 139 cubic meters per second (m^3/s) (4908.7 cubic feet per second (ft^3/s) and as late as July 1, 1995 at a flow of 731 m^3/s (25,815 ft^3/s). Instantaneous daily river temperatures on hatching dates overall years ranged from twenty to twenty two degrees Celsius (68 to 71.6°F). Newly hatched larvae average 6.3–7.5 mm (0.25-0.3 in) total length (TL) (Holden 1973; Suttkus and Clemmer 1977; Minckley 1973; Snyder 1981; Hamman 1982; Behnke and Benson 1983; Muth 1990), and 1-month-old fish are approximately 20 mm (0.79 in) long (Hamman 1982). No evidence exists of long-distance larval drift (Miller and Hubert 1990; Robinson *et al.* 1998). Upon emergence from spawning gravels, *Gila cypha* larvae remain in the vicinity of bottom surfaces (Marsh 1985) near spawning areas (Chart and Lentsch 1999).

High spring flows that simulate the magnitude and timing of the natural hydrograph provide a number of benefits to *Gila cypha*. Bank-full and over-bank flows provide allochthonous energy input to the system in the form of terrestrial organic matter and insects that are utilized as food. High spring flows clean spawning substrates of fine sediments and provides physical cues for spawning. High flows also form large re-circulating eddies used by adult fish (Chart and Lentsch 1999). High spring flows (50 percent exceedance or greater) have been correlated with increased recruitment of *Gila cypha* (Chart and Lentsch 1999).

Status, Distribution and Designated Critical Habitat
Gila cypha was listed as endangered on March 11, 1967. The USFWS designated critical habitat for the *Gila cypha* on March 21, 1994 (59 FR 13374). Historic abundance of the *Gila cypha* are unknown and historic distribution is surmised from various reports and collections that indicate the species presently occupies about 68% of its historic habitat (Tyus 1998).

There are no known occurrences of *Gilia cypha* in Wyoming (USFWS 2002). However, the species is included in the document because management actions in Wyoming may affect critical habitat for the species by extension through water depletions.

Threats
The primary threats to *Gila cypha* are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; parasitism (Asian tapeworm); hybridization with other native *Gila* species; pesticides and pollutants (USFWS 2002). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering. Threats to *Gila cypha* are flow regulation and habitat modification, predation by nonnative fishes, and pesticides and pollutants. Although historic data are limited, the apparent range-wide decline in *Gila cypha* is likely due to a combination of factors including alteration of river habitats by reservoir inundation, changes in stream discharge and temperature, competition with and predation by introduced fish species, and other factors such as changes in food resources resulting from stream alterations (USFWS 1990). Also, extensive human alterations throughout the basin prior to faunal surveys may have depleted or eliminated the species from some river reaches before its occurrence was documented.

6.9 Kendall Warm Springs Dace (*Rhinichthys osculus thermalis*) - Endangered

Species/Habitat Description
Rhinichthys osculus thermalis, the Kendal warm springs dace, belongs to the Cyprinidae family. It is the only fish species to inhabit the eighty five degrees Fahrenheit spring water of Kendall Warm Springs in the Bridger Teton National Forest in Wyoming. Adults range from one to two inches in length. They have a greyish-green body with dark blotches and a dark lateral stripe on their sides.

Rhinichthys osculus thermalis, Kendall warm springs dace, habitat is limited to only one area. *Rhinichthys osculus thermalis* are confined to one stream approximately three hundred meters (328 yards) in length. It originates at a series of thermal springs near the base of a bluff. The Kendall Warm Springs are located at 2,390 meters (7,840 ft.) in elevation. The springs flow southwest towards the Green River for a distance of 300m (984.25 ft.), before it cascades into the river over a travertine embankment. (Binns 1978).

Life History
Rhinichthys osculus thermalis spawn year-round, however, Gryska and Hubert (1997) found evidence that reproduction decreases in the winter. Researchers witnessed fewer larval fish drifting in January than in May through August. *Rhinichthys osculus thermalis* inhabit fairly shallow pools and stream not more than 0.31 meters (1 ft.) in depth. Plant growth within the water is necessary for escape cover and protection from the current. Fry also utilize the vegetation as nursery areas (USFWS 1982).

Stomach analysis of *Rhinichthys osculus thermalis* indicates they feed on benthic invertebrates and epiphytic organisms (Gryska and Hubert 1997). They suck and scrape invertebrates from the substrate by using a subterminal mouth specialized for benthic foraging. Benthic invertebrates occurring in the Kendall Warm Springs stream include Odonata (*Argia*, *Erythemis*), Trichoptera (*Cheumatopsyche, Hydroptila*), Coleoptera (*Elmidae, Hydrophilidae*), Diptera (*Heleidae, Stratiomyiidae, Tendipedidae, Tipulidae*), Amphipoda (*Hyalella azteca*), Hydracarina, and Gastropoda (*Lymnaea, Planorbidae*) (Binns 1978).

Status, Distribution
On October 13, 1970 (35 FR 6047) *Rhinichthys osculus thermalis* was listed as endangered under the Endangered Species Preservation Act of 1966 (80 Stat. 926; 16 U.S.C. 668aa(c)). On January 4, 1974 (39 FR 1171) the species was "grandfathered" into the Endangered Species Act of 1973, as amended (ESA).

Rhinichthys osculus thermalis is only known to occur in the Bridger-Teton field office in Sublette County Wyoming. *Rhinichthys osculus thermalis* are confined to one stream approximately three hundred meters (328 yd.) in length which originates at a series of thermal springs. When the species was first listed, its habitat was fragmented into two sections by a road built across the stream prior to 1934. The road culvert bisected the stream downstream from the stream's origin. Since the listing, the road culvert has since been removed and replaced with a bridge which spans the stream (USFS 1997) allowing reconnection of the habitat. The habitat ends with a waterfall which plunges downward to the non-thermal Green River below. *Rhinichthys osculus thermalis* are believed to occupy their entire historic range (Hubbs and Kuhne 1937; Kaya et al. 1992).

Threats
The habitat remains in relatively good condition. However, alterations by recreational users have occurred through the construction of a series of dams/pools near the springs and also through the contamination of the springs and stream by soaps, shampoos, and detergents. Bathing, wading, and

washing clothes in the Kendall Warm Springs area is currently prohibited, but some illegal activities have continued to occur. Other threats to the species include research efforts, oil and gas development, livestock grazing, recreation, reservoir construction, wildfire, acid rain, and herbicide/pesticide use (USFWS, 2007).

A number of natural predators of *Rhinichthys osculus thermalis* are present in its habitat. Dragonfly nymphs prey on larvae and small juvenile *Rhinichthys osculus thermalis* (Gryska and Hubert 1997). Other potential predators are dippers (*Cinclus mexicana*), Brewer's blackbirds (*Euphagus cyanocephalus*), great blue herons (*Ardea herodias*), and wandering garter snakes (*Thamnophis elegans vagrans*) (USFWS, 2007).

6.10 Pallid Sturgeon (*Scaphirhynchus albus*)-Endangered

Species/Habitat Description
Scaphirhynchus albus, the pallid sturgeon, is an ancient species that has existed during the dinosaur era *Scaphirhynchus albus* are considered to be one of the most poorly known and infrequently seen freshwater fishes in North America. *Scaphirhynchus albus* are one of the largest (76 to 172 cm, 30 to 60 in) fishes found in the Missouri-Mississippi River drainage. They weigh up to thirty-nine kilograms (85 pounds). They are typically light brown on the dorsal surface and white underneath. It has a flattened, shovel-shaped snout. Fleshy chin barbels are located about one third the distance between the mouth and snout. They also have inner barbels which are located about one half the length of the outer barbels. *Scaphirhynchus albus* have a long, slender, flattened and armored region from the dorsal fin to the tail fin (caudal peduncle), which has a long upper lobe.

Scaphirhynchus albus is a bottom dweller, found in areas of strong current and firm sand bottom in the main channel of large turbid rivers. Little is known about pallid sturgeon life requirements; however, we do know that they prefer large, turbid, free-flowing riverine habitats with rocky substrates. Pallid sturgeons are well adapted to life on the river bottom and inhabit areas of swifter water.

Life History
Scaphirhynchus albus grow very slowly, and mature late. They feed on small fishes and immature aquatic insects. Spawning occurs from June through August. The barbels, used to sense the river bottom and identify prey, allow the mouth to quickly capture it. Prey consists of aquatic insects and small bottom dwelling fish. *Scaphirhynchus albus* have been known to live beyond sixty years of age. They do not reach sexual maturity until about age twenty.

Scaphirhynchus albus are known to hybridize in nature with the closely related sturgeon, and it is thought that loss of habitat and reproductive cues (water level raises) are the likely causes. Since their former unique spawning habitats have been altered or lost largely due to damming, altered hydrology, and channelization, both species are forced to spawn at the few remaining acceptable locations. Fertilization occurs externally, and hybridization occurs when eggs and sperm of the two species are mixed in the river water as it flows over the gravelly spawning beds.

Status, Distribution and Designated or Proposed Critical Habitat
Scaphirhynchus albus was listed by the U.S. Fish & Wildlife Service as endangered on September 6, 1990, in accordance with provisions of the Endangered Species Act of 1973, as amended.

The range of *Scaphirhynchus albus* includes the headwaters of the Missouri River (Fort Benton-Great Falls, Montana) through the Mississippi River to New Orleans, Louisiana. *Scaphirhynchus*

albus has not been documented in Wyoming. However, the species is included in the document because management actions in Wyoming may affect critical habitat for the species by extension through water depletions within the Platt River drainage basin.

Threats
Because the species does not occur in the state of Wyoming, threats to the species within the state would only occur from water depletions. Since 1978, the FWS has consistently found through formal section 7 consultations with Federal agencies that actions resulting in depletions to flows in the Platte River system are likely to jeopardize the continued existence of one or more federally-listed threatened or endangered species and adversely modify critical habitat (Instruction Memorandum No. WY-2007-039).

6.11 Razorback sucker (*Xyrauchen texanus*) - Endangered

Species/Habitat Description
Xyrauchen texanus, the razorback sucker, is a fish belonging to the family Catostomidae (meaning "down mouth"). The *Xyrauchen texanus* have ventral mouths with thick lips covered with papillae and no scales on its head. Suckers are bottom browsers, sucking up or scraping off small invertebrates, algae, and organic matter with their fleshy, protrusible lips (Moyle 1976). *Xyrauchen texanus* are the only sucker with an abrupt sharp-edged dorsal keel behind its head. The keel becomes larger with age. The head and keel are dark, the back is olive-colored, the sides are brownish or reddish, and the abdomen is yellowish white (Sublette et al. 1990). Adults often exceed three kg (six lb.) in weight and six hundred mm (two feet) in length. *Xyrauchen texanus* are long-lived. The *Xyrauchen texanus* adult can live forty-four to fifty years. *Xyrauchen texanus* reaches maturity between two and seven years of age (Minckley 1983). They can produce viable gametes even when quite old. Survival adaptations include the ability to spawn in a variety of habitats and flows regimes, and over a long season.

Outside of the spawning season, adult *Xyrauchen texanu*s occupy a variety of shoreline and main channel habitats including slow runs, shallow to deep pools, backwaters, eddies, and other relatively slow velocity areas associated with sand substrates (Tyus 1987; Tyus and Karp 1989; Osmundson and Kaeding 1989; Valdez and Masslich 1989; Osmundson and Kaeding 1991; Tyus and Karp 1990). *Xyrauchen texanus* are also known to be in off-channel habitats, flooded side canyons, washes, side channels and tributaries (Muth *et al.* 1998). Habitat requirements of young and juvenile *Xyrauchen texanus* in the wild are not yet well known, particularly in native riverine environments.

Life History
Xyrauchen texanus can spawn as early as age 3 or 4, when they are 35.6 cm (14.4 in) or more long. Depending on water temperature, spawning can take place as early as November or as late as June. In the upper Colorado River basin, razorbacks typically spawn between mid-April and mid-June. These fish reportedly migrate long distances to spawn, congregating in large numbers in spawning areas. Sexually mature *Xyrauchen texanus* are generally collected on the ascending limb of the hydrograph from mid-April through June (depending on the specific location). Tyus and Karp (1990) and Osmundson and Kaeding (1991) reported off-channel habitats to be much warmer than the main stem river. *Xyrauchen texanus* presumably moved to these areas for feeding, resting, sexual maturation, spawning, and other activities associated with their reproductive cycle.

Status, Distribution and Designated or Proposed Critical Habitat
The *Xyrauchen texanus* was first listed on October 23, 1991 (56 FR 54957). It is currently designated as endangered throughout the entire range of the species. On March 14, 1989, the USFWS was petitioned to conduct a status review of the *Xyrauchen texanus* (56 FR 54957). The final rule stated, "Little evidence of natural recruitment has been found in the past thirty years, and numbers of adult fish captured in the last 10 years demonstrate a downward trend relative to historic abundance."

Critical habitat was designated for *Xyrauchen texanus* on March 21, 1994 (59 FR 13374).

Historically, *Xyrauchen texanus* were found in the main stem Colorado River and major tributaries in Arizona, California, Colorado, Nevada, New Mexico, Utah, and in Mexico (Ellis 1914; Minckley 1983). Between 1992 and 1995 larval *Xyrauchen texanus* were collected in the middle and lower Green River and within the Colorado River inflow to Lake Powell (Muth 1995). Average fecundity recorded in studies ranged from 100,800 to 46,740 eggs per female (Bestgen 1990).

Although the species has not been found in Wyoming, there is potential for the species to travel up the Little Snake River, which flows into Colorado from Wyoming and ends up in the Yampa River (USFWS 2002). The main reason this species is included in the document is because management actions in Wyoming may affect critical habitat for the species by extension through water depletions.

Threats
The primary threats to *Xyrauchen texanus* are stream flow regulation and habitat modification; competition with and predation by nonnative fishes; and pesticides and pollutants (USFWS 2002). The existing habitat, altered by these threats, has been modified to the extent that it impairs essential behavior patterns, such as breeding, feeding, and sheltering Significant changes have occurred in *Xyrauchen texanus* habitat through diversion and depletion of water, introduction of nonnative fishes, and construction and operation of dams" (56 FR 54957) and reservoirs. Dams on the main stem of the river and its major tributaries have segmented the river system, blocked migration routes, and changed much of the river habitat into lake habitat. Dams have also drastically altered flows, temperatures, and channel geomorphology.

Wydoski and Wick (1998) identified starvation of larval *Xyrauchen texanus* due to low zooplankton densities in the main channel and loss of seasonal floodplain habitats which provide adequate zooplankton densities for larval food as one of the most important factors limiting recruitment. Lower regulated river discharges, channelization, and levee construction has restricted access to those floodplain habitats. Reduction in spring peak flows may hinder the ability of *Xyrauchen texanus* to form spawning aggregations, because spawning cues are reduced (Modde and Irving 1998).

6.12 Wyoming Toad (*Bufo baxteri*) - Endangered

Species/Habitat Description
Bufo baxteri (Wyoming toad) adults have a snout-vent length that averages about 5.6 cm (2.2 in). Female Bufo *baxteri* grow slightly larger than males. The dorsal surface of the body has rounded warts intermediate in size. The cranial crests fuse medially to form an elongated boss-a ridge with a median groove. Cutting tubercles on the hind foot are well developed. Background color is dark brown, gray, or greenish with small dark blotches and a rather indistinct median line. Some *Bufo baxteri* have well defined light lateral stripes. The belly is spotted; males have a dark throat. This

toad can be distinguished by other toad species present in Wyoming by the small adult size and fused cranial crests.

Historically, *Bufo baxteri* habitat included floodplain ponds, small ponds and lakes produced by irrigation runoff, and many small seepage lakes within the Laramie Basin (Jennings et al. 2001). Currently, *Bufo baxteri* are found in sedge and grass wet meadows at the margins of lakes and ponds on the floodplain of streams in the Basin. The habitat has been described as bogs created by underground water collecting into seepage lakes (Baxter 1987). *Bufo baxteri* typically breed within the edges of bays, ponds, and irrigated meadows where water is shallow and vegetation is plentiful. The abundant vegetative cover provides important protection from summer evaporation. Numerous small seepage lakes, river courses, and irrigation water provide the moist areas essential to *Bufo baxteri* survival (USFWS 1991).

Life History

Bufo baxteri is endemic to Wyoming. It is believed to be a glacial relict found only in the Laramie Basin (Jennings et al. 2001). Adult *Bufo baxteri* are insectivorous. They eat ants, beetles, and other invertebrates (USFWS 1991). Tadpoles primarily feed on algae.

In early summer, *Bufo baxteri* are active during the daylight hours. In late July, toad activity during the daylight hours is less common. It is thought that Bufo *baxteri* become nocturnal during the dry portion of summer (starting late July) and remains mostly underground during the day. It is thought that Bufo *baxteri* burrow into softer soils such as areas that have been tilled by pocket gophers for hibernation (USFWS 1991). Toads have been observed using rodent burrows and areas of high vegetation at night. During warm afternoons *Bufo baxteri* were observed digging shallow impressions in the open substrate possibly for thermo- and osmo-regulation and predator avoidance (Parker 2000).

Breeding generally occurs in water that is less than 15.2 centimeters (6 in) deep. Adult *Bufo baxteri* typically appear at breeding sites from mid-May to mid-June when daytime temperatures reach Twenty-one degrees Celsius (70°F). Males appear first and call to attract females. Breeding typically occurs. Tadpoles usually complete their development by late August. Males begin breeding at three years of age while females begin breeding at two years of age (USFWS 1991).

Status, Distribution

Bufo baxteri was listed as federally endangered on February 16, 1984 (USFWS 1984). A recovery plan for the species was approved in 1991.

Dr. George Baxter of the University of Wyoming first discovered the *Bufo baxteri* in 1946. At that time, *Bufo baxteri* was considered abundant, although it was restricted to a relatively small range of less than 1,554 square kilometers (600 mi^2). *Bufo baxteri* was originally found from many breeding sites in the floodplains of the Big and Little Laramie rivers. During the 1970s, *Bufo baxteri* populations declined drastically. An extensive survey of the Laramie Basin in 1980 found only one population (Jennings et al. 2001). Since 1983, all Wyoming toad observations have come from an area approximately 77.7 square kilometers (30 mi^2), located 16 to 24 kilometers (ten to 15 mi) southwest of Laramie around Mortenson Lake (USFWS 1991). The species is found within the Rawlins field office in Wyoming. Attempts to introduce the *Bufo baxteri* at several locations, including Mortenson Lake in the Mortenson Lake National Wildlife Refuge (NWR), Lake George, and Rush Lake at the Hutton Lake NWR (Jennings et al. 1991) have been made.

Threats
The primary threat to *Bufo baxteri* is the amphibian chytrid fungus (*Batrachochytrium dendrobatidis)*. Chytrid fungus has been implicated in declines and extinctions of amphibian species worldwide. Several other diseases have also been observed affecting *Bufo baxteri*, including "red-leg," "short tongue syndrome" and adult enema syndrome. Red-leg symptoms include red legs and anus. Red leg is a fatal bacterial infection. Short tongue syndrome is a disease that causes toads to miss their target when attempting to capture food items (Geraud and Keinath 2004).

Water diversions, quantity and quality of water, infectious disease, predation, pesticide use, grazing and irrigation practices, weather events, climate changes and lack of genetic diversity may also affect species survival and abundance. Pesticide use may also affect food sources for *Bufo baxteri* (Geraud and Keinath 2004).

6.13 Least Tern (*Sterna antillarum*)-Endangered

Species/Habitat Description
Least tern (*Sterna antillarum)* is the smallest member of the gull and tern family. They measure 20 to 23 cm (eight to nine in) long and having a 51 cm (20 in) wingspread. Males and females appear identical. They have a black crown, white forehead, gray back, gray wings above with white below, orange legs and a black-tipped yellow bill. Immature *Sterna antillarum* have darker feathers, a dark bill and dark eye stripes on white heads.

Least tern nests in small groups on barren beaches of sand, gravel or shells, on dry mudflats and salt-encrusted soils (salt flats) and at sand and gravel pits along rivers. Nesting locations are usually at higher elevations and away from the water edge. This is because nesting starts when the river flows are high and small amounts of sand are exposed. Nests are often several hundred meters from the water (Rumancik 1987, 1988).

Life History
Least tern feed on small fish and crustaceans. The food is taken by diving from the air into shallow water. They also feed on insects, mollusks, and annelids (Whiteman 1988). During the breeding season, *Sterna antillarum* usually feed within a few hundred meters of the nesting colony.

Least tern arrives on breeding grounds in early May. Nesting success depends on the presence of bare or nearly barren sandbars, favorable water levels during nesting and food abundance. *Sterna antillarum* spend four to five months at their breeding sites. They arrive at breeding areas from late April to early June (Faanes, 1983). The nest is an inconspicuous, unlined scrape usually containing three brown spotted eggs. Egg-laying and incubation occur from late May through early August. Eggs hatch in about twenty days and chicks are typically fledged in another twenty days.

Status, Distribution and Designated or Proposed Critical Habitat
On May 28, 1985 *Sterna antillarum* was listed as endangered in accordance with provisions of the Endangered Species Act of 1973, as amended.

Historically, *Sterna antillarum* nested along the Colorado (in Texas), Red, Rio Grande, Arkansas, Missouri, Ohio and Mississippi River systems. Currently, they are known to nest in the Mississippi and Rio Grande River basins from Montana south to Texas and from eastern New Mexico and Colorado to Indiana and Louisiana(Campbell 1935; Janssen1986). The species has not been known to occur in Wyoming. However, the species is included in the document because management

actions in Wyoming may affect critical habitat for the species by extension through water depletions within the Platte River drainage basin.

Threats
Because the species does not occur in the state of Wyoming, threats to the species within the state would only occur from water depletions. Since 1978, the FWS has consistently found through formal section 7 consultations with Federal agencies that actions resulting in depletions to flows in the Platte River system are likely to jeopardize the continued existence of one or more federally-listed threatened or endangered species and adversely modify critical habitat (Instruction Memorandum No. WY-2007-039).

6.14 Piping Plover (*Charadrius melodus*) -Endangered

Species/Habitat Description
The Piping plover (*Charadrius melodus)* is a sandy-gray, robin-sized shorebird with one dark breast band (Wilcox 1959; Haig 1992). It has a dark stripe across the crown during the breeding season. Other characteristics include a white wing stripe and a white rump that is visible in flight.

Piping plover nest on sandbars and sand and gravel beaches with short, sparse vegetation along inland lakes, on natural and dredge islands in rivers, in gravel pits along rivers and on salt-encrusted bare areas of sand, gravel or pebbly mud on interior alkali ponds and lakes.

Life History
Piping plovers feed along the water's edge on small insects, worms, terrestrial insects, crustaceans and mollusks (Haig 1992).

Piping plover is present on breeding grounds from late March through August. Nests are shallow, scraped depressions occasionally lined with small pebbles, shells or other material. A clutch of four eggs is usually laid in late May or early June with hatching in twenty seven to thirty one days. *Charadrius melodus* are considered monogamous, but because nests are often destroyed at the beginning of the breeding season, new mates are known to have been chosen. One brood per year is characteristic of *Charadrius melodus*; however, females are capable of laying several clutches if a nest is destroyed (Haig 1992). Both eggs and young are tended by both parents.

Status, Distribution and Designated or Proposed Critical Habitat
On December 11, 1985, *Charadrius melodus* was listed as endangered in the Great Lakes watershed of both the United States and Canada, and as threatened in the remainder of its range in the U.S. (Northern Great Plains, Atlantic and Gulf Coasts, Puerto Rico, Virgin Islands), Canada, Mexico, Bahamas, and the West Indies, (USFWS 1985, COSEWIC 2001).

Charadrius melodus occur along shorelines around alkaline lakes as well as reservoir beaches, river islands and adjacent sand pits and beaches on large lakes (Haig and Pilsner 1993). The species has not been known to occur in Wyoming. However, the species is included in the document because management actions in Wyoming may affect critical habitat for the species by extension through water depletions.

Threats
Because the species does not occur in the state of Wyoming, threats to the species within the state would only occur from water depletions. Since 1978, the FWS has consistently found through formal section 7 consultations with Federal agencies that actions resulting in depletions to flows in the

Platte River system are likely to jeopardize the continued existence of one or more federally-listed threatened or endangered species and adversely modify critical habitat (Instruction Memorandum No. WY-2007-039).

6.15 Western yellow-billed cuckoo (*Coccyzus americanus*) - Threatened

Species/Habitat Description
The western yellow-billed cuckoo (*Coccyzus americanus*), is a medium-sized bird of about thirty centimeters (12 in) in length, and weighing about sixty grams (two ounces). The species has a slender, long-tailed profile with a fairly stout and slightly down-curved bill which is blue-black with yellow on the basal half of the lower mandible. The feathers are grayish-brown above and white below with rufous primary flight feathers. The tail feathers are boldly patterned with black and white below. The legs are short and bluish-gray and adults have a narrow, yellow eye ring. Juveniles resemble adults; however, the tail patterning is less distinct, and the lower bill may have little or no yellow. Males and females differ slightly. Males tend to have a slightly larger bill, and the white in the tail tends to form oval spots, whereas in females, the white spots tend to be connected and less distinct (Hughes 1999).

Coccyzus americanus, is one of two subspecies of the Western yellow-billed cuckoo (UDWR 2003). The western subspecies is found intermittently throughout the western United States in dense riparian vegetation, including cottonwood and willow stands, tamarisk thickets, Russian olive, willows, and orchards.

Two hectares of dense riparian vegetation is considered the absolute minimum size for cuckoo occupancy, as no cuckoos have been detected successfully nesting in patches smaller than two hectares."(Corman and Magill 2000, Halterman et al 2001).

Life History
The breeding season is in late spring. Nests are generally built from four to ten feet off the ground in riparian vegetation. Both the male and the female incubate the three to four eggs for nine to eleven days. Both parents feed the young which fledge in approximately three weeks (Kaufmann 1996).

Western yellow-billed cuckoos primarily consume insects such as caterpillars, cicadas, beetles, grasshoppers, and katydids, as well as lizards, frogs, eggs of other birds, berries, and small fruits. Population density appears to rise and fall in relation to insect outbreaks (Kaufmann 1996).

Status, Distribution and Designated or Proposed Critical Habitat
In 2012, the western subspecies of the yellow-billed cuckoo was proposed as threatened under the ESA (78 Federal Register 61621-61666). The USFWS has found that the species population status warrants listing.

In Wyoming, the Wyoming Natural Diversity Database, WYNDD, ranks the State Abundance of Yellow-billed Cuckoos, as ‘Very Rare’ - fewer than 1000 resident individuals (Keinath and Beauvais 2002). Others consider it an uncommon summer resident (WGFD 1997, Dorn and Dorn 1999). The accuracy of these designations is still unclear given the lack of survey data. There have been very few observations reported in Wyoming and fewer still that have documented breeding. Breeding was documented within the city limits of Sheridan in 1980 (Downing 1990). Within the last twenty-five years breeding was suspected along East Wolf Creek and Big Goose Creek near Sheridan, along the North Platte River in Rawhide Wildlife Habitat Management Area (WHMA), near Springer WHMA in Goshen County and along the South Fork Miller Creek north of Sundance.

Threats
Threats *Coccyzus americanus* face are related to habitat destruction and degradation, livestock use of riparian areas, water withdrawals, and human development. Hughes (1999) also summarized effects of heavy pesticide use during the last fifty years, which has likely contributed to population declines by removing and/or poisoning prey. The pesticide use may have also resulted in directly poisoning birds and causing egg shell thinning.

6.16 Whooping Crane (*Grus americana*) - Endangered

Species/Habitat Description
Grus Americana (Whooping crane) adults are snow white, except for black primary feathers on the wings, and a bare red face and crown. The bill is a dark olive-gray which will turn lighter during the breeding season. The eyes are yellow and the legs and feet are gray-black. The neck is long; the bill is long, dark and pointed; and the legs are long, thin and black. There is a patch of reddish-black bristly feathers on the top and back of the head. Black feathers on the side of the head below the yellow eye look like a long, dark moustache. *Grus Americana* is the only large white bird with black wingtips that flies with its neck straight out in front and the legs trailing far behind. It also is the only one that walks or stands on long thin legs and does not swim.

Immature cranes are a reddish cinnamon color that results in a mottled appearance as the white feather bases extend. The juvenile plumage is gradually replaced through the winter months and becomes predominantly white by the following spring as the dark red crown and face appear. Yearlings achieve the typical adult appearance late in their second summer or fall.

Grus Americana continue to use ancestral breeding areas, migration routes and wintering grounds. Over the last fifty years, there has been little natural dispersal of the species. Low population numbers likely have contributed to this lack of dispersal into new habitats and territories.

The breeding habitat for *Grus americana* is typically poorly drained wetlands in the headwaters of the Nyarling, Sass, Klewi, and Little Buffalo rivers. The area is poorly drained and interspersed with multiple shallow-water wetlands of various sizes, shapes and depths. The wetlands are separated by narrow ridges that are vegetated with white spruce (*Picea glauca*), black spruce (*P. mariana*), tamarack (*Larix laricina*), willows (*Salix* spp.) and an understory of dwarf birch (*Betula glandulosa*), Labrador tea (*Ledum groenlandicum*) and bear berry (*Arctostaphylos uvalursi*). Bulrush (*Scirpus validus*) is the dominant plant in the potholes used for nesting; although cattail (*Typha* spp.), sedge (*Carex aquatilis*), musk-grass (*Chara* spp.), and other aquatic plants are common (Lewis 1995).

Life History
Grus Americana are omnivorous, obtaining foods from soil, water, and vegetation. At their grounds, they feed primarily on mollusks, crustaceans, aquatic insects, minnows, frogs, and snakes (Allen 1956, Novakowski 1966). During migration, frogs, fish, plant tubers, crayfish, insects, and waste grains in harvested fields comprise the whooper's diet. In winter, *Grus Americana* feed primarily on crabs and clams. They will wander into upland areas following flooding by rain to feed on acorns, snails, mice, voles, crayfish, grasshoppers, and snakes (Bishop and Blankinship 1982, Hunt 1987).

Grus Americana are monogamous and form life-long pair bonds but will re-mate following the death of a mate. Typically they construct nests of bulrush and lay one to three eggs in late April and early May. The incubation period is about twenty nine to thirty one days. *Grus Americana* will re-nest if the first clutch is lost or destroyed before mid-incubation. Both sexes share incubation and brood-

rearing obligations. Even though most pairs lay two eggs, seldom does more than one chick reach fledging.

Status, Distribution and Designated or Proposed Critical Habitat
On March 11, 1967, *Grus Americana* were listed as an endangered species under the Endangered Species Preservation Act of 1966 (80 Stat. 926; 16 U.S.C. 668aa(c)). On January 4, 1974 (39 FR 1171) the species was "grandfathered" into the Endangered Species Act of 1973, as amended (ESA).

Grus Americana occur exclusively in North America and were likely never very common in historic times. The principal historic breeding range stretched across central North America from central Alberta through southern Saskatchewan and Manitoba, northeastern North Dakota, western Minnesota, southern Wisconsin, northern Iowa, and northern Illinois (Allen 1952). In 1975 the US Fish and Wildlife Service and Canadian Wildlife Service tried to establish an experimental Whooping crane population within the Rocky Mountains. Whooping crane eggs were placed in the nests of Sandhill cranes. The experiment did not work because the Whooping cranes thought they were Sandhill cranes and they didn't breed or establish a new population. No Whooping cranes are known to occur in Wyoming at this time. The species is included in the document because management actions in Wyoming may affect critical habitat for the species by extension through water depletions.

Threats
Because the species does not occur in the state of Wyoming, threats to the species within the state would only occur from water depletions. Since 1978, the FWS has consistently found through formal section 7 consultations with Federal agencies that actions resulting in depletions to flows in the Platte River system are likely to jeopardize the continued existence of one or more federally-listed threatened or endangered species and adversely modify critical habitat (Instruction Memorandum No. WY-2007-039).

6.17 Black-Footed Ferret (*Mustela nigripes*) - Endangered

Species/Habitat Description
Black-footed ferret *(Mustela nigripes)* is the only species of ferret native to North America (USFWS 2012a) These slender mustelids are distinguished by their black feet, tail tip, and "mask" across their eyes that contrast the yellowish buff to white coloring of their upper bodies and nearly white forehead, muzzle and throat (USFWS 2012b). *Mustela nigripes* are medium-sized, typically weighing between 0.64 to 1.13 kilograms (1.4 to 2.5 lb.) and measuring 48.26 to 61 centimeters (19 to 24 in) in length, including a 12.7 to 15.23 cm (five to six in) tail with males being slightly larger than the females. They also have large front paws, with claws for digging, as well as large ears and eyes (USFWS 2012a, USFWS 2012b).

The *Mustela nigripes* is intrinsically linked to the prairie dog (USFWS 2000). They require established prairie dog towns for food and shelter (Hoffmeister 1986), which primarily occur in grassland and sagebrush habitats in Wyoming. Such areas are characteristic of prairie, grassland plains, and surrounding mountain basins up to 3,200 meters (10,500 ft.) (USFWS 2003). All active prairie dog towns or complexes of towns, large enough to support ferrets are considered potential *Mustela nigripes* habitat. Although other factor, such as disease potential, may alter the suitability of the habitat for black-footed ferret.

Life History

Mustela nigripes live in prairie dog colonies year-round and are solitary, except during brief periods of the breeding season and when kits are still trailing their mothers. They are strongly nocturnal and spend much of the day below ground, appearing aboveground mostly at night. They exhibit a bimodal activity pattern, being most active in the first few hours after sundown (1700-2400) and in the early morning (0300-0600), but can be found aboveground any time of night (Clark et al. 1983, Clark 1989, Marinari 1992). Individual *Mustela nigripes* usually do not return to the same burrow every morning, but rather relocate frequently.

Breeding season for the *Mustela nigripes* occurs during March and April, with the female producing four to five young per year in May or June. The young ferrets do not come above ground until they are six weeks old (Adult 1996). The young become increasingly solitary from August through early September, and are self-sufficient from early October.

The size and shape of *Mustela nigripes* home ranges are strongly determined by distribution and density of prairie dogs. This appears to be especially true of females. Male home ranges, while tracking prairie dogs as well, also appear to be positioned to overlap the home ranges of several females. Home range boundaries are typically well-defined and individuals attempt to exclude others of the same gender. Boundaries are delineated by scent-marking, which expresses the individual's identity, sexual condition, and social status. Males will mark and patrol their home ranges more diligently in February and March as breeding season approaches. This causes them to spend more time and travel greater distances on the surface, making them more vulnerable to predation (Miller et al. 1996). Aggression is rarely observed in the *Mustela nigripes*, suggesting that scent marks are effective signals.

Their diet primarily consists of prairie dog (90%), and secondarily of mice, rabbits, birds, reptiles, and insects (10%) (Andelt 1996). The species is opportunistic and will feed on carrion. *Mustela nigripes* require a large amount of food due to a high metabolism. Hunting takes place at night, although females with young may hunt during the day.

Status, Distribution and Designated or Proposed Critical Habitat

Mustela nigripes were listed as endangered in 1967 under a precursor to the Endangered Species Act of 1973 (32 FR 4001, March 1967). On March 6, 2013, the U.S. Fish and Wildlife Service (Service) issued a letter acknowledging 'block clearance' for the State of Wyoming in response to a request from the Wyoming Game and Fish Department. This letter provides acknowledgement that the likelihood of identifying wild ferrets in Wyoming, outside of those resulting from reintroductions, is distinctly minimal. As a result, black footed ferrets in Wyoming are treated as experimental.

*Mustela nigripe*s were probably never abundant, although they originally inhabited extensive grassland areas of the Great Plains, from Texas to southern Saskatchewan, Canada (USFWS 2000). Their range extended from the Rocky Mountains east through the Dakotas and south through Nebraska, Kansas, Oklahoma, Texas, New Mexico, and Arizona.

Currently, free-ranging *Mustela nigripe*s occur only in eight reintroduction sites established by the USDI Fish and Wildlife Service since 1991 (Figure 3): Shirley Basin (Wyoming); Badlands National Park/ Conata Basin/ Buffalo Gap National Grassland (South Dakota); Charles M. Russell National Wildlife Refuge/ neighboring lands (Montana); Fort Belknap Indian Reservation (Montana); Aubrey Valley (Arizona); Cheyenne River Sioux Tribal lands (South Dakota); Coyote Basin (Colorado/ Utah); and Janos (Chihuahua, Mexico) (USDI Fish and Wildlife Service 2002).

Threats
Threats to the species include habitat loss and fragmentation, sylvatic plague, genetic drift, canine distemper, deliberate poisoning, and shootings (K. Esch et. al. 2005).

6.18 Canada Lynx (*Lynx canadensis*) - Threatened

Species/Habitat Description
Lynx Canadensis (Canada lynx) are medium-sized cats with an average adult male weighing ten kilograms (22 lb.) and measuring eighty-five centimeters (33.5 in) in length, including the tail. Adult females average slightly smaller weighing 8.5 kilograms (19 lb.) and measuring eighty-two centimeters (32 in) in length, including the tail. *Lynx Canadensis* are distinguished by long tufts on their ears, as well as large, well-furred paws, and a short, black-tipped tail. During the summer months, their pelage is reddish to gray-brown; whereas in winter, their pelage is more grayish-brown mixed with buff or pale brown with grayish-white or buff-white fur on their torso, legs, and feet (USFWS 2005, USFWS 2012c).

Lynx Canadensis inhabit forests with cold, snowy winters that offer snowshoe hare as the primary prey base. In North America, these forests are classified as boreal forests (taiga) consisting mainly of cold tolerant mixed conifers; primarily spruce (*Picea* spp.) and fir (*Abies* spp.) (USFWS 2005). Precipitation is mainly in the form of snow. Snow conditions are an important factor in the location of *Lynx Canadensis* since they are well adapted to surviving cold winters in deep snow. *Lynx Canadensis* lives in the boreal forests of North America from Alaska to Newfoundland, descending into the lower 48 states in northern New England (Maine, New Hampshire, New York, Vermont), the Western Great Lakes region (Michigan, Minnesota, Wisconsin), the Pacific Northwest (Oregon, Utah, Washington), and the Rocky Mountains (Colorado, Idaho, Montana, Wyoming) (McCord and Cardoza 1982). In lower latitudes, less than 50 degrees north, boreal forests transition to deciduous temperate forest in the Northeast and Great Lakes, and to subalpine forest in the West. Potentially suitable habitat may occur in high elevation spruce-fir habitat throughout Wyoming (USFWS 2005).

Life History
Lynx Canadensis are solitary carnivores with the ability to change reproductive output in accordance with variable, and sometimes cyclical, food availability. Adult *Lynx canadensis* are social only during the breeding season, between February and early April, when they form breeding pairs. They are polygamous and seasonally polyestrous; females cycle continuously until bred during the breeding season. Females typically give birth to one to five kittens (mean = 3.7 kittens) (McCord and Cardoza 1982).

Studies of *Lynx Canadensis* from Montana and Wyoming show that they have two different types of movement: daily and exploratory. Daily movements, typically within the home range, average two to four kilometers. Exploratory or dispersal movements can range from seven to thirty-nine kilometers and take the animal outside their home range territory (Squires and Laurion 2000). However, fragmentation of habitat in southern regions may lead to increased ranges of movement between suitable foraging and denning sites (Kochler and Brittell 1990). *Lynx Canadensis* will occasionally abandon established home ranges and become nomadic when prey is extremely scarce (McCord and Cardoza 1982).

Lynx hunt by night for their most common prey, the snowshoe hare, which can make up 70 percent of their diet (Zeveloff 1988). In Canada, Alaska, and Washington snowshoe hares comprised 35-97% of *Lynx canadensis* diet (Koehler and Aubry 1994). Secondary prey includes red squirrels,

ground squirrels, grouse, porcupine (*Erethizon dorsatum*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), deer mice (*Peromyscus* spp.), voles (*Microtus* spp.), shrews (*Sorex* spp.), and even some fish. Deer (*Odocoileus* spp.) and moose (*Alces alces*) occasionally appear in *Lynx canadensis* diets, mostly as carrion (Tumlison 1987, Ruediger et al. 2000).

Status, Distribution and Designated or Proposed Critical Habitat
On March 24, 2000 *Lynx Canadensis* was federally listed as threatened by the USFWS (65 FR 16052) in accordance with provisions of the Endangered Species Act of 1973, as amended.

Lynx Canadensis occupied Wyoming prehistorically (Kurten and Anderson 1980), as well as historically and into the present (Reeve et al. 1986). The best contiguous *Lynx Canadensis* habitat in Wyoming is in the northwestern and western portion of the state. The remainder is highly fragmented, widely dispersed, and typically isolated by large expanses of arid shrubland (Ehle and Keinath 2002). The distribution of documented *Lynx Canadensis* specimens and observations in Wyoming indicate that they most consistently occupy the Salt River, Wyoming, Teton, Wind River, Gros Ventre, and Absaroka mountain ranges (Reeve et al. 1986).

Critical habitat for the Canada lynx (50 CFR 17.95(a)) has been designated for portions of Fremont, Lincoln, Park, Sublette, and Teton Counties, including parts of Yellowstone National Park and the Bridger-Teton and Shoshone National Forests.

Threats
Threats to the species include but are not limited to habitat fragmentation, habitat destruction which reduces habitat for potential prey, deforestation, fire, predators, human interactions, vehicle collisions, disease, poaching and oil and mineral developments (Meaney and Beauvais 2004).

6.19 Grizzly Bear (*Ursus arctos*) - Threatened

Species/Habitat Description
Grizzly bear (*Ursus arctos)* is large, powerful bear with a massive head, small eyes, prominent nose, small rounded ears, and short tail (Pasitschniak-Arts 1993). The species is recognized by its dished facial profile, prominent shoulder hump, and long, slender, slightly re-curved fore claws twice the length of the hind claws (Pasitschniak-Arts 1993, Wilson and Ruff 1999). Dorsal guard hairs of some individuals from western North America are variegated and show a silver tipped or grizzled appearance, hence the name grizzly.

Ursus arctos occupy a variety of habitats throughout their range. They are highly adaptable and are capable of exploiting different landscapes given their lifestyle and intelligence. *Ursus arctos* habitat in the lower 48 States is characterized by extensive forest cover often interspersed with grasslands and meadows. In Wyoming these habitats are typically above 1,500 m (932 mi) (Schwartz et al. 2002). Home ranges must include sites suitable for hibernation. Denning sites are most commonly located in the subalpine fir stands on north-facing exposures (Craighead et al. 1995).

Life History
Except for mating and caring for the young, Ursus arctos primarily lead solitary lives, spending most of their time foraging, or looking for food. Mating occurs from June through July. Ursus arctos embryos do not begin to develop until the mother begins her winter hibernation, although mating may have taken place up to 6 months before. As with other bears, if the mother has not accumulated enough fat to sustain her as well as developing cubs, the embryos typically do not develop. Cubs

depend upon their mother's milk for almost a year, stay with their mother for up to 3 years, and reach breeding maturity at about 4 1/2 to 5 1/2 years.

Prior to the growing season, grizzly bears congregated on ruminant wintering grounds. As succulent plant species became available, bears concentrate their activity at feeding sites in open areas near cover. After the growing season, bears will move to moist sites where succulent grasses and forbs remained available throughout the season. As valley vegetation declined, bears moved to the lodgepole pine forests to exploit late season foods such as whitebark pine seeds, berries, mushrooms (Russula spp.), and smilacina rhizomes.

Ursus arctos utilize a variety of foods including whitebark pine seeds, army cutworm moths, ants, earthworms, rodents, spawning cutthroat trout (Oncorhynchus clarki), ungulates (winter-killed or weakened animals, young in the spring and summer, bull elk weakened by the rut in the fall, and wolf kills), gut piles of hunter killed elk and moose, fungal sporocarps, horsetails (Equisetum arvense), graminoids, forbs, berries, roots (especially roots of the biscuitroot) and anthropogenic foods such as garbage, pet food, and livestock (Kendall 1980, Mace et al. 1997, Mattson 2001, Mattson et al. 1991a, Mattson et al. 1991b, Mattson et al. 2002a, Mattson et al. 2002b, Mattson and Reinhardt 1995, Mattson and Reinhardt 1997, Schwartz et al. 2003). Researchers believe ungulates and whitebark pine seeds appear to be the two most important foods for Ursus arctos, followed by army cutworm moths and spawning cutthroat trout (Mattson et al. 1991a, Mattson et al. 1991b, Mattson et al. 1992). On average, ungulate meat comprises nearly half of the annual energy intake for adult females and more than half for adult males (Reinhardt et al. 2001).

Intensive feeding occurs in autumn prior to denning. The most frequently used denning habitat is located in subalpine fir forest (Craighead et al. 1995). Mean den emergence among males was the fourth week in March and ranged from the first week in February to the fourth week in May.

Status, Distribution and Designated or Proposed Critical Habitat

The grizzly bear was listed as threatened in the lower 48 States under the Endangered Species Act by the U.S. Fish and Wildlife Service in 1975 (Fed. Reg. 40:145, 31734-31736).

Historically, the range of the grizzly in North America extended south from Alaska to northern Mexico and east from the Pacific coast to the Canadian Prairies and U.S. Great Plains west of the Mississippi River (Hall and Kelson 1959, Schwartz et al. 2003). They also occurred throughout most of Wyoming (Long 1965). Currently, five populations remain below the Canadian border. The population in Wyoming is located in the northwestern portion of the state (Servheen 1999). In Wyoming and elsewhere the grizzly bear has expanded its range in the past two decades and has reoccupied historic habitats. Current range expansion of the *Ursus arctos* population is particularly evident in the southern portion of the ecosystem in Wyoming (Schwartz et al. 2002).

Threats

The primary reasons for the decline of grizzly bear in North America are excessive human-caused mortality and habitat loss (Schwartz et al. 2003). Displacement of *Ursus arctos* from quality habitats, resulting from roads and other mad-made structures such as fences and buildings may prevent dispersal; force bears to use poorer quality sites, increase intraspecific competition by further forcing more bears into limited remote habitat, and may cause social disruption in areas away from developments and roads (Kasworm and Manley 1989, McLellen 1989). These disturbances may result in displacement and/or disruption of normal behavior patterns such as copulation, movement, denning, foraging, physiological arousal without overt behavioral response, and even direct loss of habitat via avoidance.

Environmental events, such as drought and climate change may also pose significant threats to long-term persistence of small isolated populations and are therefore real threats to persistence of the grizzly bear population in Wyoming. Researchers are particularly concerned about impacts of future climate warming on two very important foods, seeds of whitebark pine and aggregated army cutworm moths. These two species occur at high elevations and are therefore particularly susceptible to climate warming.

6.20 Preble's Meadow Jumping Mouse (*Zapus hudonius preblei*) - Threatened

Species/Habitat Description

Preble's meadow jumping mouse (*Zapus hudonius preblei*) is a relatively small rodent with an extremely long tail, large hind feet and long hind legs. The tail is bicolored, lightly-furred and typically twice as long as the body. They have a distinct, dark, broad stripe on its back that runs from head to tail and is bordered on either side by gray to orange-brown fur. The hair on the back of all jumping mice appears coarse compared to other mice. The underside fur is white and much finer in texture (Krutzsch 1954, Fitzgerald et al. 1994).

Zapus hudonius preblei is generally found at elevations between 2,318 m (7,600 ft.) and 1,418 m (4,650 ft.) (U.S. Fish and Wildlife Service 1998). They inhabit well developed riparian habitat with adjacent, relatively undisturbed, grassland communities and a nearby water source (Bakeman 1997). Well-developed riparian habitat includes a dense combination of grasses, forbs and shrubs; a taller shrub and tree canopy may be present. The shrub canopy is often willow (*Salix* spp.); However, other shrub species, such as snowberry (*Symphoricarpus* sp.), chokecherry *(Prunus virginiana*), hawthorn (*Crataegus* sp.), Gambel's oak (*Quercus gambelli*), alder (*Alnus incana*), river birch (*Betula fontinalis*), skunkbrush (*Rhus trilobata*), wild plum (*Prunus americana*), lead plant (*Amorpha fruticosa*), dogwood (*Cornus sericea*) and others also may occur (Bakeman 1997, Shenk and Eussen 1998).

Life History

Zapus hudonius preblei are able to travel long distances (Ryon 1999, Shenk and Sivert 1999a). *Zapus hudonius preblei* constructs day nests composed of grasses, forbs, sedges, rushes, and other available plant material. Nests are typically globular in shape or simply raised mats of litter and are most commonly above ground but have also been observed below ground. Nests are generally found under debris at the base of shrubs and trees or in open grasslands. An individual mouse can have multiple day nests in both riparian and grassland communities and have been observed abandoning a nest after approximately a week of use. Hibernation nests occur underground both within and outside of the one hundred year floodplain. *Zapus hudonius preblei* typically enter hibernation nests between September and October and emerge the following May. *Zapus hudonius preblei* does not store food. They survive on fat stores accumulated prior to hibernation.

Fecal analyses conducted on the species show that their diet consists primarily of insects and fungi after emerging from hibernation. In May, their diet shifts to fungi, moss, and pollen during mid-summer (July and August), with insects again added in September. The shift in diet, along with shifts in mouse movements, suggests that the *Zapus hudonius preblei* may require specific seasonal diets. Perhaps the diet is related to the physiological constraints imposed by hibernation. *Zapus hudonius preblei* have also been observed climbing grass stalks to forage on the seed heads.

Status, Distribution and Designated or Proposed Critical Habitat
Zapus hudonius preblei was listed as a threatened subspecies under the ESA in May of 1998 (63 FR 26517). *Zapus hudonius preblei* is found in both the North and South Platte River basins, from the eastern flank of the Laramie Mountains and the Laramie Plains in southeastern Wyoming, south along the eastern flank of the Front Range in Colorado and into the headwaters of the Arkansas River Basin near Colorado Springs, Colorado (Long 1965; Hall 1981 Fitzgerald et al. 1994). The semi-arid climate of southeastern Wyoming and eastern Colorado limits the extent of riparian (river) corridors and restricts the range of *Zapus hudonius preblei* within this region.

Zapus hudonius preblei has not been found east of Cheyenne, Wyoming or on the extreme eastern plains in Colorado (Beauvais 2001). The eastern boundary for the subspecies is likely defined by the dry short grass prairie which may present a barrier to eastward expansion (Beauvais 2001).

Threats
Zapus hudonius preblei have numerous predators including garter snakes (*Thamnophis* spp.), prairie rattlesnakes (*Crotalus viridus*), bullfrogs (*Rana catesbiana*), foxes (*Vulpes vulpes* and/or *Urocyon cinereoargenteus*), house cats (*Felis catus*), long-tailed weasels (*Mustela frenata*), and raptors (Shenk and Sivert 1999, Schorr 2001). Other potential predators of jumping mice include coyotes (*Canis latrans*), barn owls (*Tyto alba*), great horned owls (*Bubo virginianus*), western screech owls (*Otus kennicottii*), long-eared owls (*Asio otus*), northern harriers (*Circus cyaneus*), northern pike (*Esox lucius*) and creek chub (*Semolitus atromaculatus*) (Whitaker 1963).

Other mortality factors for *Zapus hudonius preblei* include drowning and occasional losses associated with vehicles (Shenk and Sivert 1999, Schorr 2001).

Habitat loss, alteration, degradation, and fragmentation resulting from urban development, flood control, water development and other human land uses, especially in riparian habitat, have adversely impacted *Zapus hudonius preblei* populations.

6.21 Northern Long-eared Bat (*Myotis septentrionalis*) - Proposed

Species/Habitat Description
A medium-sized bat species, the northern long-eared bat adult body weight averages 5 to 8 g, with females tending to be slightly larger than males. Fur is medium to dark brown on its back, dark brown, but not black, ears and wing membranes, and tawny to pale-brown fur on the ventral side. The northern long-eared bat is distinguished from other *Myotis* species by its long ears (average 17 mm (0.7 in)) that, when laid forward, extend beyond the nose but less than 5 mm (0.2 in) beyond the muzzle. The tragus is long, pointed, and symmetrical. Within its range, the northern long-eared bat can be confused with the little brown bat (*Myotis lucifugus*) or the western long-eared myotis (*Myotis evotis*).

Northern long-eared bats forage primarily in coniferous or deciduous forests. They are short-distance migrants, the distance between summer habitat and the hibernaculum typically being 56 km (35 mi) (Hester and Grenier 2005) to 89 km (55 mi) (USFWS 2014) or less.

Northern long-eared bats predominantly overwinter in hibernacula that include caves and abandoned mines. Hibernacula used by northern long-eared bats are typically large, with large passages and entrances, relatively constant, cooler temperatures, and with high humidity and no air currents. They are typically found roosting in small crevices or cracks in cave or mine walls or ceilings, often with only the nose and ears visible, thus are easily overlooked during surveys. To a lesser extent, northern

long-eared bats have been found overwintering in other types of habitat including abandoned railroad tunnels, more frequently in the northeast portion of the range.

During the summer, northern long-eared bats typically roost singly or in colonies underneath bark or in cavities or crevices of both live trees and snags. Males and non-reproductive females' summer roost sites may also include cooler locations, including caves and mines. Northern long-eared bats have also been observed roosting in colonies in human made structures, such as buildings, barns, park pavilions, sheds, cabins, under eaves of buildings, behind window shutters, and in bat houses. Northern long-eared bats most likely are not dependent on a certain species of trees for roosts throughout their range; rather, certain tree species will form suitable cavities or retain bark and the bats will use them opportunistically. Structural complexity of habitat or available roosting resources may be more important factors. The species appears to favor areas with greater canopy cover, and often roosts below the canopy, but higher on slopes. Northern long-eared bats switch roosts often, typically every 2-3 days. Bats switch roosts for a variety of reasons, including, temperature, precipitation, predation, parasitism, and ephemeral roost sites.

Life History

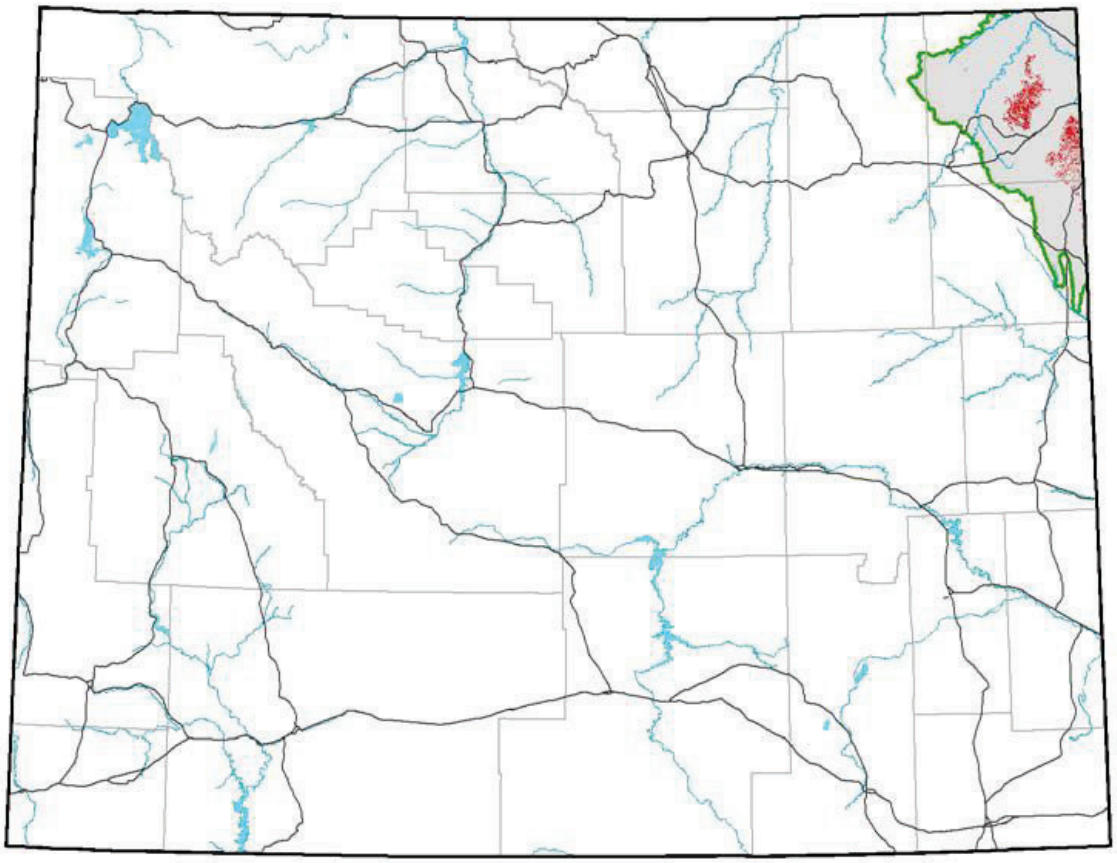
Northern long-eared bats hibernate during the winter months to conserve energy from increased thermoregulatory demands and reduced food resources. In general, northern long-eared bats arrive at hibernacula in August or September, enter hibernation in October and November, and leave the hibernacula in March or April. In the Black Hills northern long-eared bats typically enter hibernacula by October 1 and depart before May 15 (Reeves pers. Comm). Northern long-eared bats have shown a high degree of philopatry (using the same site multiple years) for a hibernaculum, although they may not return to the same hibernaculum in successive seasons.

Typically, northern long-eared bats are not abundant and compose a small proportion of the total number of bats hibernating in a hibernaculum. Although usually found in small numbers, the species typically inhabits the same hibernacula with large numbers of other bat species, and occasionally are found in clusters with these other bat species. Other species that commonly occupy the same habitat include: little brown bat, big brown bat, eastern small-footed bat, tri-colored bat, and Indiana bat. Northern long-eared bats exhibit significant weight loss during hibernation. The northern long-eared bat is not considered a long-distance migratory species; short migratory movements between summer roost and winter hibernacula have been documented. Movements from hibernacula to summer colonies may be further. Several studies show a strong homing ability of northern long-eared bats in terms of return rates to a specific hibernaculum, although bats may not return to the same hibernaculum in successive winters.

Breeding occurs from late July in northern regions to early October in southern regions and commences when males begin to swarm hibernacula and initiate copulation activity. Hibernating females store sperm until spring, exhibiting a delayed fertilization strategy. Ovulation takes place at the time of emergence from the hibernaculum, followed by fertilization of a single egg, resulting in a single embryo; gestation is approximately 60 days. Maternity colonies, consisting of females and young, are generally small, numbering from about 30 to 60 individuals. Adult females give birth to a single pup typically in late May or early June, but may occur as late as July. Juveniles typically start flying at 21 days. Adult longevity is estimated to be up to 18.5 years.

The northern long-eared bat has a diverse diet including moths, flies, leafhoppers, caddisflies, and beetles, with diet composition differing geographically and seasonally. Foraging techniques include hawking (catching insects in flight) and gleaning in conjunction with passive acoustic cues.

Emerging at dusk, most hunting occurs above the understory, but under the canopy on forested hillsides and ridges, rather than along riparian areas. This coincides with data indicating that mature forests are an important habitat type for foraging.



Map 2. Wyoming Natural Diversity Database Predicted Northern-Long-Eared Bat Distribution in Wyoming.

Status, Distribution

On October 2, 2013, the USFWS proposed the northern long-eared bat for listing as Endangered under the ESA (USFWS 2013a). Unless otherwise referenced, the species information in this BA came from the Proposed Rule in the FR notice (USFWS 2013a). It was determined that the northern long-eared bat is in danger of extinction, predominantly due to the threat of white-nose syndrome (WNS). However, other threats (the present or threatened destruction, modification, or curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; other natural or manmade factors affecting its continued existence) when combined with WNS heighten the level of risk to the species.

NatureServe gives this species a global conservation rank G2/G3, meaning that the species is imperiled, with a high to moderate risk of extinction or elimination due to restricted range, relatively

few populations or occurrences, recent and widespread declines, threats, or other factors (NatureServe 2013).

Most BLM field offices have not inventoried for presence of northern long-eared bat. As further surveys are conducted, previous and current factors affecting areas with northern long-eared bat will be addressed on a case-by-case basis.

Regional and Local Distribution
The northern long-eared bat ranges across much of the eastern and north central U.S., and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia. In the U.S., the species' range reaches from Maine west to Montana, south to eastern Kansas, eastern Oklahoma, Arkansas, and east to the Florida panhandle. Throughout the majority of the species' range it is patchily distributed, and historically was less common in the southern and western portions of the range than in the northern portion of the range. Although they are typically found in low numbers in inconspicuous roosts, most records of northern long-eared bats are from winter hibernacula surveys. Wyoming has no known hibernacula (likely due to lack of survey effort, suitability of habitat, and extent of range) (Hester and Grenier 2005).

The U.S. portion of the northern long-eared bat's range can be described in four parts: the eastern population, Midwestern population, the southern population, and the western population. Historically, the northern long-eared bat was most abundant in the eastern portion of its range.

The northern long-eared bat is generally less common in the western portion of its range (Map 2); it is considered common in only small portions of the western range (e.g., Black Hills) and uncommon or rare in the western extremes of the range (e.g., Wyoming, Kansas, Nebraska). The northern long-eared bat is considered abundant in the Black Hills having been observed hibernating and during the summer.

Threats
It was determined that the northern long-eared bat is in danger of extinction, predominantly due to the threat of WNS. WNS is a disease caused by the cold-loving fungus, *Psuedogymnoascus (Geomyces) destructans*. First observed in New York in 2006, WNS has spread rapidly across the Northeast and into the Midwest and Southeast. Throughout the range of WNS, up to 99 percent of infected bats die from the disease. Although there is uncertainty about the spread of WNS, experts agree that the fungus will likely spread throughout the United States (USFWS 2013b).

The northern long-eared bat is also threatened by the loss and degradation of summer habitat caused by human development, and by collision with or barotrauma (injury to the lungs due to a change in air pressure) caused by wind turbines. Mine closures and vandalism of winter roosts and hibernacula also pose threats to this species (USFWS 2013b). These additional threats (the present or threatened destruction, modification, or curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; other natural or manmade factors affecting its continued existence) when combined with WNS heighten the level of risk to the species (USFWS 2013a).

6.22 Gray Wolf (Canis Lupus) – Non-essential experimental

Species/habitat Description
The gray wolf (Canis lupus) is the largest of the wild canids. It has a long bushy tail and erect, slightly rounded ears. Its legs are longer, feet larger, and chest narrower than a dog of similar size.

The wolf has long, thick, coarse fur that is typically grizzled gray but that can vary from black through white. The most common pelt colors in the northern Rocky Mountains are grizzled gray and black (USFWS 1994). Average height at the shoulders is 65-80 cm; total length (nose to tip of tail) is 1.3 to 1.5m with some individuals approaching 1.8m; and weight ranges from 36-41 kg for females and 41-50 kg for males (Ginsberg and Macdonald 1990).

Wolves are habitat generalists and historically occupied most habitats in the Northern Hemisphere including all of Wyoming, and populations flourished in areas with plentiful large prey (Fitzgerald et al. 1994, Long 1965, Mech 1970). The presence of abundant prey, which in Wyoming is elk, and relatively low levels of human activity are the main habitat requirements for wolves.

Human activities associated with highways, roads, and other linear corridors cause fragmentation of wolf ranges and result in the death of wolves (Paquet and Carbyn 2003). Persistent occupancy of wolves is usually assured at road densities below 0.6-0.7 km/km2. Road density is the measurable manifestation of human activity and the mortality of wolves is caused by the humans using the roads, rather than road density per se. Roads with low use can provide travel corridors for wolves.

Life History

Wolves are social animals that live in groups, called packs, which typically include a breeding pair (the alpha pair), their offspring, and other non-breeding adults. Wolves are capable of mating by age two or three and sometimes form a lifelong bond. They can live 13 years and breed past 10 years of age. On the average, five pups are born in early spring and are cared for by the entire pack. For the first six weeks, pups are reared in dens. Dens are often used year after year, but wolves may also dig new ones or use some other type of shelter, such as a cave.

Pups depend on their mother's milk for the first month, then are gradually weaned and fed regurgitated meat brought by pack members. By the time pups are seven to eight months old they are almost fully grown and begin traveling with the adults. After a year or two, young wolves may leave to try to find a mate and form a pack. Lone, dispersing wolves have traveled as far as 600 miles in search of a mate or territory.

Wolf packs live within territories, which they defend from other wolves. Their territories range in size from 50 square miles to more than 1,000 square miles, depending on the available prey and their seasonal movements. Wolves travel over large areas to hunt, as far as 30 miles in a day. Although they usually trot along at five miles per hour, wolves can run as fast as 40 miles per hour for short distances.

Regional and Local Distribution

As recently as the mid-nineteenth, century gray wolves existed throughout most of North America (Nowak 1983, Young and Goldman 1944). Wolves were present throughout the northern Rocky Mountain region prior to colonization by Europeans which resulted in reduction of native ungulate populations, introduction of livestock, and persecution of wolves (Lopez 1978, Young 1944). By the 1940s, wolves persisted only in isolated locations in the United States. In the late 1970s wolves were dispersing into the mountainous areas near Glacier-Waterton Lakes National Parks in Alberta, Canada, just across the border (Ream and Mattson 1982). And then in 1985 a pack of 12 wolves crossed the border from Alberta to Glacier National Park (Robbins 1986). Breeding was documented in 1986, for the first time in 50 years in the U.S. (Ream et al. 1989), and by 1992 at least 50 individuals were known to reside in at least four packs along the continental divide of Montana (Fritts et al. 1995, Pletscher et al. 1997, Ream et al. 1991). Wolves were documented from Idaho since the early 1980s. Prior to reintroduction, lone wolves have ventured into the GYA on a number

of occasions (USFWS 1994), and a single wolf was documented in northwestern Wyoming in 1992 (Fritts et al. 1995).

After many years of effort and planning, wolves were reintroduced into the Greater Yellowstone Area (GYA) in 1995-1996 (USFWS 1994). This effort targeted large tracts of federal public lands (Yellowstone National Park (YNP) and the surrounding U.S. Forest Service wilderness areas) that supported large populations of wild ungulates and had a relatively low likelihood for wolf-human conflicts. Today wolves are found in the northwestern portion of Wyoming, largely in the GYA (Maps 2-6). There are 14 packs in YNP and 7 that spend most of their time in Wyoming (WGFD 2003). Numerous sightings of wolves suggest that they roam over much of western Wyoming. The known distributional extent of these wandering wolves is the Bighorn Mountains and Ten Sleep to the east, Morgan, Utah (outside Ogden) to the south and into Idaho to the west (Jimenez 2004). Wolves have been sighted southwest of Meeteetse and around Worland and Thermopolis. Wolves are also routinely seen around Kemmerer and Cokeville, and Lander, and have shown up east of Rock Springs. In these southern portions of the Red Desert, the wild prey density is very low and cattle and sheep density is higher; the wolves switch to the available prey and conflicts result. Although wolves can prey on pronghorn, these ungulates do not constitute consistent dietary items.

Threats

Human-caused mortality including legal and illegal harvest, depredation control, and vehicle collisions are the largest cause of mortality and is the only source of mortality that can significantly affect wolf populations at recovery levels (USFWS 2000). In the GYA, of 20 documented wolf mortalities in 2000, nine were human-caused (six control actions, two vehicle collisions, and one illegal take), six resulted from natural causes, and five were of unknown cause (USFWS et al. 2001). Researchers have found that if annual mortality exceeds 30-40%, population growth of wolves may be suppressed (Ballard et al. 1987, Fuller 1989, Keith 1983). The response of wolves to humans is variable, as can be expected in a long-lived animal with a large degree of social transmission. Wolves are sensitive to human predation and harassment, which influence the distribution and survival of wolves. However, human-caused mortality is consistently noted as the major problem (Paquet and Carbyn 2003). Loss of habitat is a trend to be expected as human populations increase and more development occurs.

In unexploited populations annual mortality is 45% for yearlings and 10% for adults (USFWS 1994). Intraspecific conflict between neighboring packs, starvation, disease and injury are the primary causes of mortality (Mech et al. 1998). However, natural mortality does not regulate populations in the northern Rockies (USFWS 2000).

Flexible food habits, high annual productivity, and dispersal capabilities enable wolves to respond to natural and human-induced disturbances. These traits confer a high degree of resiliency on wolves (Weaver et al. 1996). Wolf distribution will ultimately be defined by the interaction of wolves' ecological requirements and human tolerance (Paquet et al. 2001), not by artificial delineations that are administratively determined. In short, ungulate abundance and distribution and human settlement patterns will define wolf habitat. The network of public lands in western Montana, central Idaho, and northwest Wyoming facilitates connectivity between the three sub-populations and the public lands in the rest of the Rocky Mountain west will provide dispersal routes. Wolf populations will fluctuate as a result of management actions, natural mortality, legal harvest, illegal take, wolf productivity, and ungulate population fluctuations.

Gray wolves occur in disjunct populations in the conterminous United States, and management goals will be set to maintain this population structure. Computer simulations of disjunct wolf populations indicate that these populations can survive as long as there is at least occasional movement between populations, and human persecution is not excessive and prey is sufficiently abundant (Callaghan 2002, Haight et al. 1998). Furthermore, it is the long-term levels of mortality and immigration that are important, more so than the short-term fluctuations in dispersal and mortality. However, one ultimate factor that will determine whether wolves persist where they have been reintroduced, and where they disperse, is human attitude. This will require a concerted effort on the part of federal and state agencies and of nongovernmental groups. Another significant factor is stochastic: fire, weather (drought and/or hard winters), and disease. These unpredictable and often uncontrollable factors can create unforeseen circumstances and results on recovering wolf populations.

The Yellowstone fires of 1988 took out old growth, which caused a decline in the moose population. The hard winter of 1996-1997 caused a decline in the elk populations, as has the current drought. Disease can present a surprising vulnerability. The introduction in the early 1980s of a human-introduced canine parvovirus to the wolves at Isle Royale caused a crash in the wolf population from 50 to 14 animals in a period of two years (Smith et al. 2003). The effect of epizootoics and enzootics on wolf population dynamics is not well documented. Where information is available, an estimated 2–21% of wolf mortality is due to disease. The transmission of disease from domestic dogs, e.g. parvovirus, is a grave conservation concern (Paquet and Carbyn 2003). Rabies is infrequent in wolf populations. Sarcoptic mange is an epizootic of concern, and some researchers suggest that it could be a regulating factor in canid populations. Other arthropod parasites are known but do not cause significant problems. Viral infections of concern are distemper and canine hepatitis.

The economic forces present often drive decisions that affect the status of wolves. Market interests usually run counter to conservation and restoration activities because the former cater to short-term financial gain rather than long-term sustainability of the environment. Wolves and their protection may encourage society to value biological diversity and the tangible and intangible benefits of such a species in our lives (Paquet and Carbyn 2003).

7.0 Effects of Selected Alternative

This Biological Assessment only addresses changes in management that will occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment will not be analyzed in this document.

7.1 Blowout Penstemon (*Penstemon haydenii*) - Endangered

7.1.1 Effects of Selected Alternative

Lands and Realty

Amendment changes conducted under the lands and realty management program would only prove to benefit the blowout penstemon. Activities under the lands and realty program include: manage sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMAs (Action 40), identification of sage-grouse habitat in mineral right areas or

conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Lands and realty management actions included in the Amendment are not likely to occur in the dunal habitats of the blowout penstemon because Greater Sage-Grouse occur in lands dominated by large sagebrush stands. Actions that would not affect the species include the management of sage-grouse PHMAs and the installation of perch deterrents. However, changes in some of the lands and realty management actions included in the 9-plan Amendment may inadvertently protect the species through land acquisitions, retentions, and reclamations.

Livestock

All of the documented occurrences of blowout penstemon reside within sand dune habitats included in the Rawlins field office. Many of the livestock management actions in the Amendment include habitat improvements for greater sage-grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

Livestock management actions included in the Amendment are not likely to occur in the dunal habitats of the blowout penstemon because Greater Sage-Grouse occur in lands dominated by large sagebrush stands. Actions that would not affect the species include Action 22, 45, 46, 139, 48, 49, 50, 53, 54, 56, and 57. However, changes in some of the Livestock management program may inadvertently protect the species through the development of a drought contingency plan (Action 52), which could reduce grazing pressure in nearby blowout penstemon habitats and the promotion of balanced grazing (Action 55) which could also alleviate heavy grazing impact in one specific area.

Mineral Resources

Minerals management actions in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances(Action 79), prohibit strip mining near sage-grouse(Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season(Action 60), working with permittees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66) minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Planning measures which consider the construction of a master a plan for development or leasing when impacts to sage-grouse could occur (Action 66), noise, timing and distance restrictions (Action 60), requiring reclamation plans (Action 69a), and implementing a reclamation bond in sage-grouse areas (Action 69) would not affect the blowout penstemon because no surface disturbing activities would occur.

Because greater sage-grouse do not reside in the same habitat required by blowout penstemon, management actions intended to protect sage-grouse would not directly affect blowout penstemon. Since the species may occur in the same geographical area, some management actions may indirectly affect the species. No negative effects are anticipated to occur. Inadvertent, beneficial actions may include limitations or exclusion of road developments, minimization and avoidance of surface disturbances, minimization of habitat fragmentation, and implementing measures to reduce pollutants. These actions could reduce overall impacts and limit road access within or leading to blowout penstemon habitat which would benefit the species.

Recreation
BLM SRPs and Forest Service Recreation SUAs would be continued to be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in this document and the area which needs to be consulted on would be the closing of SRP's and SUA's in PHMAs sage-grouse habitats when negative impacts cannot be mitigated. The closing of any BLM SRP or Forest Service Recreation SUA in PHMAs would not directly affect the blowout penstemon.

Special Designations
No new special designation actions are included in Amendment (Action 84). As such, special management actions would not affect the blowout penstemon.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 Greater Sage-Grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Actions included in the special species management program such as the collection of data (Action 4), agencies meeting annually to coordinate sage-grouse data (Action 16), and the development of adaptive management strategies (Action 137), retainment of existing plans unless modified in the Amendment (Action 25), would not affect the blowout penstemon because no surface disturbing actions would occur. However, Action 12 which includes the modification of existing notices and plans to minimally impact PHMAs may indirectly benefit the species by reducing impacts to PHMAs. The reduction of impacts in PHMAs may also indirectly benefit blowout penstemon which may occur in nearby habitats.

Travel Management
Travel management actions described in the Amendment include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails(Action 86, 87), avoidance of new road construction within 1.9 miles of habitat(Action 88), restricting upgrades or new road construction within greater sage-grouse habitat(Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Travel management actions such as the minimization, reclamation, avoidance, restriction and closure of various roads may inadvertently benefit the species even though greater sage-grouse do not occur in the same habitat as the blowout penstemon (Action 18, 86, 88, 89). For example, blowout penstemon may be protected if a road restriction or closure in sage-grouse habitat blocks access to a road which leads to dunal habitat. The use of approved seed mixtures (Action 92) and implementation of travel management plans (Action 18) would likely have no effect on the blowout penstemon.

Vegetation
Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMA areas (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the changes in the amendment would direct managers to use updated sage-grouse information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

Vegetation management actions such as season restrictions (Action 6), monitoring efforts (Action 9), and working collaboratively with various agencies (Action 22) are not expected to directly or indirectly impact occupied or potential blowout penstemon habitat because no surface disturbing

actions would occur. However, actions that minimize the potential for the spread of noxious and invasive weeds (Action 9), deferment of livestock (Action 97), and the improvement of vegetative composition (Action 93, 95, 100, 107) may inadvertently benefit the species through improve habitat conditions.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in greater sage-grouse PHMA habitats(Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

All the wild horse management actions discussed in the Amendment include protective measures such as the consideration of sage-grouse when conducting land health assessments (Action 111) and during AML evaluation (Action 110). It also includes identifying direct and indirect effect of sage-grouse during NEPA analysis when water or range improvements are necessary (Action 112). Based on known locations of blowout penstemon as shown on USFWS maps (USFWS 2013), none of the known blowout penstemon sites are located in herd management areas. As such, none of these actions would occur within or near blowout penstemon habitat because wild horse HMA's do not occur within blowout penstemon habitat.

Wildland Fire

Wildland fire management actions included in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat(Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

Wildland fire management actions are not expected to directly impact occupied or potential blowout penstemon habitat. Preferred habitat for the plant is sparsely vegetated sand dunes, which generally do not burn and it is not likely that fires associated with wildland fire management would be prescribed in such areas. Also, because greater sage-grouse do not reside in the same habitat required by blowout penstemon, wildland fire management actions intended to protect sage-grouse would not affect blowout penstemon. No surface disturbing wildfire resource actions which are pre-planned such as the use of prescribed burns would occur without proper analysis and implementation of all appropriate conservation measures in order to ensure the protection of the Blowout penstemon.

Wildlife and Fisheries
Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring(Actions 1, 3,125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15,21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA habitat (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Because greater sage-grouse do not reside in the same habitat required by blowout penstemon, management actions intended to protect sage-grouse would not adversely affect blowout penstemon. However, because the species may occur in the same geographical area, some management actions may inadvertently benefit the species. Beneficial actions may include restrictions on oil and mineral developments, restrictions of surface disturbing activities, and increased mitigation protocol. Other management actions such as the implementation of noise restrictions (Action 135) and timing restrictions (Actions 17, 131, 132, 133 and 134) would have no effect on blowout penstemon.

Cumulative Effects
The following analysis focuses on cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a); the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-discretionary livestock grazing
- Non-discretionary ORV use
- Non-discretionary development of energy and mineral resources
- Non-discretionary herbicide and insecticide treatments
- Other non-discretionary surface disturbing activities

Habitat loss, fragmentation, and degradation are reasonably certain to occur on non-federal lands. Impacts to habitat would likely result from ground disturbing activities that remove or stabilize dune systems or exacerbate the spread of noxious and invasive weeds into dune areas. These impacts are likely to be attributed to human activities such as urbanization, oil and gas developments, or the lack of prescribed fires. Additionally, the surge of interest in wind energy development on non-federal lands is likely to impact blowout penstemon habitat. Construction and maintenance of access roads, facilities, and turbine pads will result in the direct loss and fragmentation of habitat, and downwind impacts from operant wind developments could alter sand erosion patterns and soil-water evaporation rates.

There is also potential for direct harm, such as tissue damage or uprooting of plants, to occur on non-federal lands. OHV use and livestock grazing and management are likely to occur in areas with occupied or potential habitat. The intensity of direct harm caused by such activities could be severe

on non-federal lands since there are no protections afforded to the species, such as restrictive buffers, to minimize impacts from activities that could result in repeated and intense damage to the plants.

7.1.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions which are not changed as a result of the Amendment, such as livestock grazing and road developments have already been consulted on using agency approved methods and are not analyzed in this document.

Management actions included in the Amendment are largely supportive in nature and guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and habitat for the sage-grouse. Management actions included in the Amendment such as increased monitoring, data collection, greater coordination and review, and noise, distance, and timing restrictions, would have no effect on the blowout penstemon. Also, because sage-grouse utilize upland sagebrush dominated habitats, management actions included in the Amendment would not occur in the dunal habitat where blowout penstemon habitat exists. In addition, where Greater-sage-grouse habitats may be located adjacent to dunal blowout penstemon habitats, some of the measures meant to protect sage-grouse may also indirectly protect the blowout penstemon. Protective measures include, surface restricting actions, retentions, reclamations, road closures, reductions of pollutants, reduction of impacts and deferment of livestock grazing. Furthermore, protective conservation measures found in the Amendment and maintained as part of the existing BLM and FS RMPs would further reduce the potential for adverse effects for the species. No actions included in the Amendment are anticipated to negatively affect the blowout penstemon, however, some of the actions may have unintentional beneficial effects. Based on the above analysis of effects, implementation of the Amendment, "**May Affect, but is Not Likely to Adversely Affect**" blowout penstemon within the Rawlins Field Office.

Blowout penstemon are only located in the Rawlins field office. As a result, implementation of the Amendment would have "**No Effect**" on the blowout penstemon within the Bridger Teton NF, Pinedale, Kemmerer, Rock Springs, Medicine-Bow NF, Casper, Thunder Basin Grasslands, Casper and Newcastle Field Offices.

Table 4-Summary and Determination of Effects for the Blowout penstemon

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NLAA	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NLAA	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

7.2 Colorado Butterfly Plant (*Gaura neomexicana var. coloradensis*) - Threatened

7.2.1 Effects of Selected Alternative

Lands and Realty
Amendment changes conducted under the lands and realty management program would not affect the Colorado butterfly plant. Activities under the lands and realty program include, manage sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Wyoming Colorado butterfly plants are located outside of the range for the sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, lands and realty management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Livestock

Livestock management actions in the Amendment include habitat improvements for Greater Sage-Grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat (Action 45, 139), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

Wyoming Colorado butterfly plant populations are located outside of the range for the sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, livestock management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Mineral Resources

Minerals management actions included in the Amendment include the following: designing roads in a way which minimize impacts in sage-grouse priority/PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse(Action 76), prohibition of geophysical operations near Greater Sage-Grouse, right-of-way and vehicle limitations, timing restrictions during breeding season(Action 60), working with permittees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66) minimization of habitat fragmentation (Action 62, 67), requiring reclamation plans (Action 69a), noise reduction, and minimize impacts to related sensitive resources.

All Wyoming Colorado butterfly plant populations are located outside of the range for the Sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, mineral resource management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Recreation
With the implementation of the Amendment, BLM SRPs and Forest Service Recreation SUAs would be continued to be allowed in sage-grouse PHMA habitat, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

Wyoming Colorado butterfly plant populations are located outside of the range for the sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, recreation management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special designations management actions would not affect Colorado butterfly plant or its designated critical habitat.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 Sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Wyoming Colorado butterfly plant populations are located outside of the range for the Sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, special status species management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Travel Management
Travel management actions included in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within sage-grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Wyoming Colorado butterfly plant populations are located outside of the range for the Sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are

on private or state lands. As a result, travel management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater-sage-grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the changes in the amendment would direct managers to use updated sage-grouse information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

Wyoming Colorado butterfly plant populations are located outside of the range for the sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, vegetation management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in sage-grouse PHMA (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Based on known locations of Colorado butterfly plant as shown on USFWS maps (USFWS 2013), none of the known Colorado butterfly plant populations are located in herd management areas. In addition, Wyoming Colorado butterfly plant populations are located outside of the range for the Sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, wild horse management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Wildland Fire
Wildland fire management actions included in the Amendment, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for Sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

Wyoming Colorado butterfly plant populations are located outside of the range for the sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, wildland fire management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Wildlife and Fisheries
Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring (Actions 1, 3,125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15,21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA habitat (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Wyoming Colorado butterfly plant populations are located outside of the range for the Sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. As a result, wildlife and fisheries management actions would not affect the Colorado butterfly plant or its designated critical habitat.

Cumulative Effects
The following analysis focuses on cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a); the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-discretionary livestock grazing

- Non-discretionary ORV use
- Non-discretionary development of energy and mineral resources
- Non-discretionary herbicide and insecticide treatments
- Other non-discretionary surface disturbing activities
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Sand and gravel operations
- Existing and proposed wind farms
- Hard rock mining (including coal, trona, and phosphates)
- Bentonite mining

The USFWS has designated critical habitat for the Colorado butterfly plant. One unit of designated critical habitat is located within the Casper FO. This area consists of 107 acres long 1.5 stream miles of Tepee Ring Creek in Platte County, Wyoming and is under private land ownership (USFWS 2005). This area surrounds the one known population of Colorado butterfly plant within the Casper FO. This amendment would not contribute to cumulative effects on the area designated as critical habitat for the Colorado butterfly plant.

7.2.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions which are not changed as a result of the Amendment such as livestock grazing and road developments have already been consulted on using agency approved methods and are not analyzed in this document. In addition, Wyoming Colorado butterfly plant are located outside of the range for the Sage-grouse. No known occurrences of the Colorado butterfly plant in Wyoming are located on BLM or FS public lands within the planning area. Two occurrences are known on the F.E. Warren Air Force Base, while other occurrences are on private or state lands. Because no known occurrences of the Colorado butterfly plant are found within the planning area, implementation of the Amendment, would have "**No Effect**" on the Colorado butterfly plant or its designated critical habitat, within the Bridger Teton, Rawlins, Pinedale, Kemmerer, Rock Springs, Medicine-Bow, Casper, Thunder Basin and Newcastle Field Offices.

Table 5-Summary and Determination of Effects for the Colorado butterfly plant

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Rawlins Critical	Medicine Bow	Casper	Casper Critical	Thunder Basin	Newcastle
Lands and Realty	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

Special Status Species	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect (No Adverse Modification for critical habitat)
NJ = No Jeopardy7.3 Desert yellowhead (*Yermo xanthocephalus*) – Threatened

7.3 Desert yellowhead (Yermo xanthocephalus) – Threatened

7.3.1 Effects of Selected Alternative

Lands and Realty

Activities under the lands and realty program include, manage sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, lands and realty management actions would not affect the desert yellowhead.

Livestock

Many of the livestock management actions in the Amendment include habitat improvements for sage-grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46,139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing

range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, livestock management activities would not affect the desert yellowhead.

Mineral Resources

Minerals management actions included in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse(Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season(Action 60), working with permittees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66) minimization of habitat fragmentation (Action 62, 67), requiring reclamation plans (Action 69a), noise reduction, and minimize impacts to related sensitive resources.

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, mineral resource management actions would not affect the desert yellowhead.

Recreation

BLM SRPs and Forest Service Recreation SUAs would be continued to be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, recreation management actions would not affect the desert yellowhead.

Special Designations

No new special designation actions are included in Amendment (Action 84). As such, special management actions would not affect desert yellowhead. In addition, desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, special designations management actions would not affect the desert yellowhead.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, special status species management actions would not affect the desert yellowhead.

Travel Management
Travel management actions included in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails(Action 86, 87), avoidance of new road construction within 1.9 miles of habitat(Action 88), restricting upgrades or new road construction within sage-grouse habitat(Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, travel management actions would not affect the desert yellowhead.

Vegetation
Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in

sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, vegetation management actions would not affect the desert yellowhead.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in sage-grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, wild horse management actions would not affect the desert yellowhead.

Wildland Fire

Wildland fire management actions included in the Amendment, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update sage-grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat(Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, wildland fire management actions would not affect the desert yellowhead.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring (Actions 1, 3, 125), development of landscape level restoration, conservation and

maintenance strategies (Actions 8, 14, 15, 21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7, 128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA habitat (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, wildlife and fisheries management actions would not affect the desert yellowhead.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Because the desert yellowhead site is only known to occur in the Beaver Rim area and is entirely located on federal surface, there is little or no potential for direct cumulative effects from future state, local, or private actions to affect the species.

7.3.2 Effects Determination

The effects determination only addresses changes in management that will occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and will not be analyzed in this document.

Activities included in the Amendment are not anticipated to affect the species. The desert yellowhead is not known to occur in any areas covered by the Amendment. The species known locations occur entirely on land managed by the BLM Lander field office in the Beaver Rim area approximately 10 km (6 mi) north of Sweetwater Station in southern Fremont County, Wyoming. Because the species is not known to occur in the Amendment boundary, wildlife and fisheries management actions would not affect the desert yellowhead.

Desert yellowhead are only located in the Lander BLM field office, which is not included in the 9 plan Amendment boundary. As a result, implementation of the Amendment would have "**No Effect**" on the desert yellowhead or its designated critical habitat within the Bridger Teton, Pinedale, Kemmerer, Rawlins, Medicine-Bow, Casper, Rock Springs, Thunder Basin and Newcastle Field Offices.

Table 6- Summary and Determination of Effects for Desert yellowhead

Program	Bridger Teton	Bridger Teton Critical	Pinedale	Pinedale Critical	Kemmerer	Kemmerer Critical	Rock Springs	Rock Springs Critical	Rawlins	Rawlins Critical	Medicine Bow	Medicine Bow Critical	Casper	Casper Critical	Thunder Basin	Thunder Basin Critical	Newcastle	Newcastle Critical
Lands and Realty	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect (No Adverse Modification for critical habitat)
NJ = No Jeopardy

7.4 Ute Ladies' -tresses (*Spiranthes diluvialis*) - Threatened

7.4.1 Effects of Selected Alternative

Lands and Realty
Activities under the lands and realty program described in the Amendment include, management of sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Lands and realty management actions included in the Amendment are not likely to occur in the wetland habitats of the Ute ladies'- tresses because Greater Sage-Grouse occur in lands dominated by large sagebrush stands. However, sagebrush dominated stands may be located adjacent to wetland habitats.

Management actions that would not affect the Ute ladies'- tresses include the management of sage-grouse PHMAs, and the installation of perch deterrents. However, changes in some of the lands and realty management actions included in the Amendment may inadvertently protect the species through land acquisitions, retentions, and reclamations. Restrictions of right-of-way corridors could also benefit the species by reducing or prohibiting ground disturbances in habitat occupied by the Ute ladies'-tresses. Road closures would reduce the number of people within Ute ladies'- tresses habitat and the resulting impacts on the species and habitat.

Livestock
Livestock management actions described in the Amendment include the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46,139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes Sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

All of the documented occurrences of Ute ladies'-tresses reside within wetland habitats in Wyoming. Because Greater Sage-Grouse occur in lands dominated by large sagebrush stands, livestock management actions meant to benefit sage-grouse would not occur in Ute ladies'-tresses habitat. Actions that would not affect Ute ladies'-tresses include Action 22, 45, 48, 49, 53, 54, 56, 57). However, because the species may occur in the same geographical area as sage-grouse, changes in

some of the Livestock management program may inadvertently protect the species through the development of a drought contingency plan (Action 52), which could reduce grazing pressure near Ute ladies'-tresses habitats; the promotion of balanced grazing (Action 55) could also alleviate heavy grazing impact in wetland areas.

Mineral Resources

Minerals management actions included in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances(Action 79), prohibit strip mining near sage-grouse(Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season(Action 60), working with permittees/lessees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Planning measures which do not cause surface disturbing actions such as the consideration of a master a plan for development or leasing when impacts to sage-grouse could occur (Action 66), noise, timing and distance restrictions (Action 60), implementing a reclamation bond in sage-grouse areas (Action 66)and requiring reclamation plans (Action 69a) would not affect Ute ladies'-tresses.

Because sage-grouse do not reside in the same habitat required by Ute ladies'-tresses, management actions intended to protect sage-grouse would not directly affect Ute ladies'-tresses. However, because the species may occur in the same geographical area, some management actions may inadvertently benefit the species. Beneficial actions may include limitations of road developments and implementing measures to reduce pollutants. These actions could limit road access within Ute ladies'- tresses habitat which would benefit the species. It is not anticipated that the management actions would negatively affect the species.

No surface disturbing mineral resource actions would occur without proper analysis and implementation of all appropriate conservation measures in order to ensure the protection of the Ute ladies'-tresses. It is anticipated that new proposals of mineral management actions would result in the development of additional protection measures, and coordination with the USFWS.

Recreation

Recreation management actions include BLM SRPs and Forest Service Recreation SUAs would be allowed in sage-grouse PHMA habitat, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in the Amendment and the area which needs to be consulted on would be the closing of SRP's and SUA's in PHMAs when negative impacts cannot be mitigated. The closing of any BLM SRP or Forest Service Recreation SUA in PHMAs would not directly affect the Ute ladies'-tresses. In fact, the closing of SRP's and SUA's may benefit the species and protect it from potentially negative impacts from recreation.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the Ute ladies'-tresses.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 Sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Actions included in the special species management program such as the collection of data (Action 4), agencies meeting annually to coordinate sage-grouse data (Action 16), and the development of adaptive management strategies (Action 137), retainment of existing plans unless modified in the Amendment (Action 25), would not have any effect on the Ute ladies'-tresses because no surface disturbing actions would take place. However, Action 12 which includes the modification of existing notices and plans to minimally impact PHMAs may indirectly benefit the species by reducing impacts to PHMAs. The reduction of impacts in PHMAs may also indirectly benefit Ute ladies'-tresses which may occur in adjacent habitats.

Travel Management
Travel management actions described in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails(Action 86, 87), avoidance of new road construction within 1.9 miles of habitat(Action 88), restricting upgrades or new road construction within sage-grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Travel management actions such as the minimization, reclamation, avoidance, restriction and closure of various roads may inadvertently benefit the species even though sage-grouse do not occur in the same habitat as the Ute ladies'-tresses (Action 18, 86, 88, 89). For example, Ute ladies'-tresses may be protected if a road restriction or closure in sage-grouse habitat blocks access to a road which leads to wetland habitat. The use of approved seed mixtures (Action 92) and implementation of travel management plans (Action 18) would likely have no effect on the Ute ladies'-tresses.

Vegetation
Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive

species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the actions in the Amendment would direct managers to use updated sage-grouse information which would benefit the sage-grouse.

Vegetation management actions are not expected to directly impact occupied or potential Ute ladies'- tresses habitat. Because sage-grouse do not reside in the same habitat required by Ute ladies'- tresses. Vegetation management actions intended to protect sage-grouse would occur in upland sage-grouse habitat areas. Vegetation management actions such as season restrictions (Action 6), monitoring efforts (Action 9), and working collaboratively with various agencies (Action 22) are not expected to directly or indirectly impact occupied or potential Ute ladies'-tresses habitat because no surface disturbing management action would result. However, actions that minimize the potential for the spread of noxious and invasive weeds (Action 9), deferment of livestock (Action 97), and the improvement of vegetative composition (Action 93, 95, 100, 107) may inadvertently benefit the species through improved habitat conditions.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in sage-grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Based on known locations of Ute ladies'- tresses as shown on USFWS maps (USFWS 2013), none of the known Ute ladies'- tresses sites are located in herd management areas. In addition, all the wild horse management actions discussed in the Amendment only include protective measures such as Herd management plan amendments which protect sage-grouse and the requirement of NEPA analysis when water or range improvements are necessary. None of these actions would occur within or near Ute ladies'- tresses habitat. The management actions are also not expected to inadvertently affect nearby habitat.

Wildland Fire

Wildland fire management actions outlined in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse

populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for Sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions which benefit sage-grouse during fire suppression activities (Action 124).

Changes to existing wildland fire management are not expected to directly impact occupied or potential Ute ladies'- tresses habitat. Preferred habitat for the plant is wetland habitats comprised of sub-irrigated, alluvial soils, which generally do not burn and it is not likely that fires associated with sage-grouse wildland fire management would be prescribed in such areas. Also, because sage-grouse do not reside in the same habitat required by Ute ladies'- tresses, most of the wildland fire management actions intended to protect sage-grouse would not affect Ute ladies'- tresses. Beneficial effects to the species may inadvertently result through avoidance and protective measures for the sage-grouse.

No surface disturbing wildland fire management actions would occur without proper analysis and implementation of all appropriate conservation measures in order to ensure the protection of the Ute ladies'- tresses. It is anticipated that new proposals of fire management actions would result.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring (Actions 1, 3,125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15,21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Because sage-grouse do not reside in the same habitat required by Ute ladies'-tresses, management actions intended to protect sage-grouse would not directly affect Ute ladies'-tresses. However, because the species may occur in the same geographical area, some management actions may inadvertently benefit the species. Beneficial actions may include limitation of oil and gas development densities, restrictions of surface disturbing activities, and increased mitigation protocol. Other management actions such as the implementation of noise restrictions (Action 135) and timing restrictions (Actions 17, 131, 132, 133 and 134) would have no effect on Ute ladies'-tresses because no surface disturbing actions would occur.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal

activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Sand and gravel operations along major river corridors
- Existing and proposed wind farms
- Hard rock mining (including coal, trona, and phosphates)
- Bentonite mining
- Subdivision development along rivers
- Recreation along rivers and river corridors (including camping, rafting, hunting, and golf course development)
- Coal mine operations
- Transmission lines
- Seismic exploration
- Trona (soda ash) mining
- Municipal dump expansions

Implementation of the Amendment would not change any potential effect s to the Ute ladies'-tresses orchid that may result from current or projected future non-Federal actions.

7.4.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions which are not changed as a result of the Amendment, such as livestock grazing and road developments have already been consulted on using agency approved methods and are not analyzed in this document.

Management actions included in the Amendment are largely supportive in nature and guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and habitat for the sage-grouse. Management actions included in the Amendment such as increased monitoring, data collection, greater coordination and review, and noise, distance, and timing restrictions, would have no effect on the Ute ladies'- tresses. Also, because sage-grouse utilize upland sagebrush dominated habitats, management actions included in the Amendment may indirectly benefit the Ute ladies'-tresses by avoiding actions that may impact wetlands or riparian through sedimentation or other human interferences. Protective measures include, surface restricting actions, retentions, reclamations, road closures, reductions of pollutants, reduction of impacts and deferment of livestock grazing. Furthermore, protective conservation measures found in the Amendment and maintained as part of the existing BLM and FS RMPs would further reduce the potential for adverse effects for the species. No actions included in the Amendment are anticipated to negatively affect the Ute ladies'-tresses. Based on the above analysis of effects, implementation of the Amendment "**May Affect, but is Not Likely to Adversely Affect**" the Ute ladies'- tresses within the Bridger Teton, Pinedale, Kemmerer, Rawlins, Medicine-Bow, Casper, Rock Springs, Thunder Basin and Newcastle Field Offices.

Table 7- Summary and Determination of Effects for Ute ladies'- tresses

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Livestock	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Mineral Resources	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Recreation	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Transportation and Access	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Vegetation	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Watershed and Water Quality	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA
Wildlife and Fisheries	NLAA	NLAA	NLAA	NLAA	NLAA	NE	NLAA	NLAA	NLAA

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

7.5 Platte River Species- Western prairie-Fringed Orchid (*Platanthera praeclara*)-Endangered, Pallid Sturgeon (*Scaphirhynchus albus*)-Endangered, Least tern (*Sterna antillarum*)-Endangered, Piping Plover (*Charradrius melodus*) –Endangered, Whooping crane (*Grus americana*) - Endangered

7.5.1 Effects of Selected Alternative

Lands and Realty

Activities under the lands and realty program include, manage sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in greater sage-grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of greater sage-grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Livestock

Livestock management actions described in the Amendment include habitat improvements for greater sage-grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46,139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Mineral Resources
Minerals management actions described in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season(Action 60), working with permittees/lessees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Recreation
BLM SRPs and Forest Service Recreation SUAs would be continued to be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the Platte River Species or associated downstream designated critical habitats.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 Greater Sage-Grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals.

Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Travel Management

Travel management actions included in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails(Action 86, 87), avoidance of new road construction within 1.9 miles of habitat(Action 88), restricting upgrades or new road construction within greater sage-grouse habitat(Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater-Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Wild Horses
Wild horse management action include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Wildland Fire
Wildland fire management actions described in the Amendment include the following, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

None of the Platte river species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Wildlife and Fisheries
Wildland fire management actions included in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource

objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), and management actions which benefit sage-grouse during fire suppression activities (Action 124).

None of the Platte River species or their designated critical habitat occur within Wyoming. The primary concern with these species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species or associated downstream designated critical habitats are anticipated.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the Platte River species within the state of Wyoming which contain water depletions include but are not limited to the following:

- Water irrigation diversions
- Construction of Dams
- Consumptive water use
- Introductions of non-aquatic species
- Regulated water flow

Implementation of the Amendment would not change any potential effects to the Platte River species that may result from current or projected future non-Federal actions.

7.5.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions which are not changed as a result of the Amendment, such as livestock grazing and road developments have already been consulted on using agency approved methods and are not analyzed in this document.

No critical habitat for the Platte River species is specifically designated in Wyoming. The Platte River species, the least tern, pallid sturgeon, Western prairie fringed orchid, and whooping crane are not known to occur in Wyoming. In addition, the piping plover is considered a rare or accidental visitor to the state of Wyoming.

Implications for the species and their critical habitats are downstream due to effects from water depletions or withdrawals. When water depletions or withdrawals occur, the BLM and FWS notify the Wyoming State Engineers Office (SEO) when depletions are slated to occur to ensure an appropriate accounting of all water depletions and approval of the SEO are obtained in advance of concluding section 7 consultation. Because the management actions included in the Amendment describe nothing about new depletions, notification is not warranted. Based on the above analysis of effects, implementation of the Amendment would have "**No Effect**" on the Platte River species or

their associated downstream designated critical habitats for the Bridger-Teton, Pinedale, Kemmerer, Rawlins, Medicine-Bow, Casper, Rock Springs, Thunder Basin and Newcastle Field Offices.

Table 8- Summary and Determination of Effects for the Platte River Species

Program	Bridger Teton	Bridger Teton Critical	Pinedale	Pinedale Critical	Kemmerer	Kemmerer Critical	Rock Springs	Rock Springs Critical	Rawlins	Rawlins Critical	Medicine Bow	Medicine Bow Critical	Casper	Casper Critical	Thunder Basin	Thunder Basin Critical	Newcastle	Newcastle Critical
Lands and Realty	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect (No Adverse Modification for critical habitat)
NJ = No Jeopardy

7.6 Endangered Colorado River Fish Species- Bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Humpback Chub (*Gila cypha*) Razorback sucker (*Xyrauchen texanus*)-Endangered

7.6.1 Effects of Selected Alternative

Lands and Realty
Activities under the lands and realty program include, management of sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in greater sage-grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of greater sage-grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions, which occur in Wyoming, which may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Livestock
Livestock management actions described in the Amendment include habitat improvements for greater sage-grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46,139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Mineral Resources
Minerals management actions described in the Amendment include the following: designing roads which minimize impacts in sage-grouse priority/PHMAs (Action 20), protective modifications to

lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season (Action 60), working with permittees/lessees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Recreation
BLM SRPs and Forest Service Recreation SUAs would be continued to be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the endangered Colorado River fish.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Travel Management
Travel management actions included in the Amendment include, restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to

existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within greater sage-grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, and appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Changes to existing travel management would not affect the species. No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Wild Horses

Wild horse management actions include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which

occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Wildland Fire
Wildland fire management actions described in the Amendment includes, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions which benefit sage-grouse during fire suppression activities (Action 124).

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Wildlife and Fisheries
Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring(Actions 1, 3,125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15,21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

No critical habitat for the endangered Colorado River fish species is specifically designated in Wyoming. The primary concern with the Colorado River fish species is water depletions which occur in Wyoming, may cause effects to the species downstream in their respective habitats. None of the changes in management as a result of actions included in the Amendment would cause water depletions or withdrawals. Therefore, no effects to the species are anticipated.

Cumulative Effects
Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal

activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the four endangered Colorado River fish species within the state of Wyoming which contain water depletions include but are not limited to the following:

- Water irrigation diversions
- Construction of Dams
- Consumptive water use
- Introductions of non-aquatic species
- Regulated water flow

Implementation of the Amendment would not change any potential effects to the four endangered Colorado River fish species that may result from current or projected future non-Federal actions.

7.6.2 Effects Determination

The effects determination only addresses changes in management that will occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved method and will not be analyzed in this document.

No critical habitat for the four endangered Colorado River fish species is specifically designated in Wyoming. The USFWS, in accordance with the Upper Colorado River Endangered Fish Recovery Program, adopted a *de minimis* policy, which states that water-related activities in the Upper Colorado River Basin that result in less than 0.1 acre-foot per year of depletions in flow have no effect on the Colorado River endangered fish species, and thus do not require consultation for potential effects on those species. None of the management actions included in the Amendment would cause water depletions or withdrawals. Based on the above analysis of effects, implementation of the Amendment would have "**No Effect**" on the Endangered Colorado River fish or their designated critical habitat.

Table 9- Summary and Determination of Effects for Endangered Colorado River fish

Program	Bridger Teton	Bridger Teton Critical	Pinedale	Pinedale Critical	Kemmerer	Kemmerer Critical	Rock Springs	Rock Springs Critical	Rawlins	Rawlins Critical	Medicine Bow	Medicine Bow Critical	Casper	Casper Critical	Thunder Basin	Thunder Basin Critical	Newcastle	Newcastle Critical
Lands and Realty	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect (No Adverse Modification for critical habitat)
NJ = No Jeopardy

7.7 Kendall Warm Springs Dace (*Rhinichthys osculus thermalis*) - Endangered

7.7.1 Effects of Selected Alternative

Lands and Realty
Activities under the lands and realty program include, manage sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as “essential habitat” for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, lands and realty management actions could not affect the species.

Livestock
Livestock management actions described in the Amendment include the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46,139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 aces (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as “essential habitat” for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, livestock management actions could not affect the species.

Mineral Resources
Minerals management actions included in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season (Action 60), working with permittees/lessees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as "essential habitat" for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, mineral resource management actions could not affect the species. In addition, in 1962, Kendall Warm Springs was withdrawn from locatable mineral entry (27 FR 8830, August 28, 1962).

Recreation
Recreation management actions include BLM SRPs and Forest Service Recreation SUAs would be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in the Amendment and the area which needs to be consulted on, would be the closing of SRP's and SUA's in PHMAs sage-grouse habitats when negative impacts cannot be mitigated. A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as "essential habitat" for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Recreationists are not allowed in the Kendall warm springs. Finally, because the fence has been erected and protections for the species are already set in place, recreation management actions could not affect the species.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the Kendall warm springs dace.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action

16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as "essential habitat" for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, special status species management actions could not affect the species.

Travel Management

Travel management actions included in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within Greater Sage-Grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as "essential habitat" for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, travel management actions could not affect the species.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock

grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the changes in the Amendment would direct managers to use updated sage-grouse information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

Vegetation management actions are not expected to directly impact Kendall warm spring's dace. A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as "essential habitat" for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, vegetation management actions could not affect the species.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in greater sage-grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Kendall warm spring's dace have not been identified within herd management areas within the planning area. Also, the Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as "essential habitat" for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, wild horse management actions could not affect the species.

Wildland Fire

Wildland fire management actions described in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments

(Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions which benefit sage-grouse during fire suppression activities (Action 124).

A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as “essential habitat” for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, wild fire management actions could not affect the species.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring(Actions 1, 3,125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15,21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as “essential habitat” for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, wildlife and fisheries management actions could not affect the species.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Because the entire known population of the Kendall Warm Springs dace is located entirely on federal surface lands, there is little or no potential for direct cumulative effects from future state, local, or private actions to affect the species.

7.7.2 Effects Determination

A Kendall Warm Springs Biological Unit Management Plan was approved by USFS in 1978. The area designated by the Biological Unit Management Plan encompasses 160 acres (64.75 ha). In 1969, the 160 acres were fenced to provide habitat protections. Then in 1977, the fenced area was identified as "essential habitat" for the dace. Boundaries include most of the small watershed and adjacent terrestrial communities which surrounds and directly affect the spring and stream section. The Bridger-Teton National Forest which covers the known population of dace maintains the fence (USFS 1990). Because the fence has been erected and protections for the species are already set in place, implementation of the Amendment would have "**No Effect**" on the Kendall warm springs dace, within the Bridger Teton, Kemmerer, Rawlins, Medicine-Bow, Pinedale, Casper, Thunder Basin and Newcastle Field Offices.

Table 10- Summary and Determination of Effects for Kendall Warm Springs Dace

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NE	NE	NE	NE	NE	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NE	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NE	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NE	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NE	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

7.8 Wyoming Toad (*Bufo baxteri*) - Endangered

7.8.1 Effects of Selected Alternative

Lands and Realty

Activities under the lands and realty program described in the Amendment include, management of sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse and habitat and populations have not been observed.

Livestock

Livestock management actions described in the Amendment include the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat (Action 45), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse and habitat and populations have not been observed.

Mineral Resources

Minerals management actions described in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season(Action 60), working with permittees/lessees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Recreation

BLM SRPs and Forest Service Recreation SUAs would be continued to be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the Wyoming toad.

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Special Status Species
No new special designation actions are included in RMP (Action 84). As such, special management actions would not affect Wyoming toad. In addition, because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Travel Management
Travel management actions included in the RMP, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within greater sage-grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Vegetation
Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Wildland Fire

Wildland fire management actions described in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update sage-grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring(Actions 1, 3,125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15,21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse populations and habitat have not been observed.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Subdivision development along rivers
- Recreation along rivers and river corridors (including camping, rafting, and hunting)
- Transmission lines

Implementation of the Amendment would not change any potential effects to the Wyoming toad that may result from current or projected future non-Federal actions.

7.8.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and will not be analyzed in this document.

Because habitat for the Wyoming toad and the sage-grouse do not overlap, actions included in the Amendment would not affect the Wyoming toad. The Wyoming toad is found in the floodplains of the Big and Little Laramie rivers where sage-grouse and habitat have not been observed. As a result, implementation of the Amendment would have "**No Effect**" on the Wyoming toad within the Bridger Teton, Pinedale, Kemmerer, Rawlins, Medicine-Bow, Casper, Rock Springs, Thunder Basin and Newcastle Field Offices.

Table 11- Summary and Determination of Effects for the Wyoming Toad

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NE	NE	NE	NE	NE	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NE	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NE	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NE	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NE	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

7.9 Black-Footed Ferret (*Mustela nigripes*) – Endangered, Experimental

7.9.1 Effects of Selected Alternative

Lands and Realty
Activities under the lands and realty program include, management sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in Greater Sage-Grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Because only experimental populations of black footed ferret exist in the state of Wyoming, lands and realty management actions would not affect extirpated endangered black footed ferret (USFWS 2013). However, changes in some lands and realty management actions included in the Amendment may inadvertently protect the experimental populations located in the Rawlins field office through land acquisitions, retentions, and reclamations.

Livestock

Livestock management actions described in the Amendment include habitat improvements for Greater Sage-Grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat (Action 45), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

Because only experimental populations of black footed ferret exist in the state of Wyoming, livestock grazing management actions would not affect extirpated endangered black footed ferret (USFWS 2013). However, changes in some livestock management actions included in the Amendment may inadvertently protect the experimental populations located in the Rawlins field office through the development of a drought contingency plan (Action 52), which could reduce grazing pressure in black footed ferret habitats and the promotion of balanced grazing (Action 55) which could also alleviate heavy grazing impact in ferret habitat.

Mineral Resources

Minerals management actions described in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season (Action 60), working with permittees/lessees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66) minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Because only experimental populations of black footed ferret exist in the state of Wyoming, minerals resource management actions would not affect extirpated endangered black footed ferret (USFWS 2013). However, some management actions may indirectly benefit the experimental populations. Beneficial actions may include limitations or exclusion of road developments, minimization and avoidance of surface disturbances, minimization of habitat fragmentation, and implementing

measures to reduce pollutants. These actions could reduce overall impacts and limit road access within or leading to black footed ferret habitat which would benefit the species.

Recreation
Recreation management actions describe that BLM SRPs and Forest Service Recreation SUAs would be continued to be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

Because only experimental populations of black footed ferret exist in the state of Wyoming, recreation management actions would not affect extirpated endangered black footed ferret (USFWS 2013). The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in this document and the area which needs to be consulted, would be the closing of SRP's and SUA's in PHMAs when negative impacts cannot be mitigated. The closing of any BLM SRP or Forest Service Recreation SUA in PHMAs would only benefit black footed ferret by reducing recreational impacts in experimental populations.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the Black footed ferret.

Special Status Species
Special status species management actions include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Because only experimental populations of black footed ferret exist in the state of Wyoming, special status species management actions would not affect extirpated endangered black footed ferret (USFWS 2013). Action 12 which includes the modification of existing notices and plans to minimally impact PHMAs may indirectly benefit the experimental populations where the species habitats overlap. Other actions which only include greater planning and coordination for the sage-grouse would not affect the black footed ferret.

Travel Management
Travel management actions described in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within greater sage-grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable

(Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Because only experimental populations of black footed ferret exist in the state of Wyoming, travel management actions would not affect extirpated endangered black footed ferret (USFWS 2013). Travel management actions such as the minimization, reclamation, avoidance, restriction and closure of various roads may inadvertently benefit the experimental populations where habitat with black footed ferret and sage-grouse overlap. Restricting road access would protect the experimental populations from negative impacts such damage to burrows, loss of forage, harassment, noise, and direct mortality.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

Because only experimental populations of black footed ferret exist in the state of Wyoming, vegetation management actions would not affect extirpated endangered black footed ferret (USFWS 2013). The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use Plans using agency approved protocols. However, the changes in the amendment would direct managers to use updated sage-grouse information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

Management actions that minimize the potential for the spread of noxious and invasive weeds (Action 9), deferment of livestock (Action 97), and the improvement of vegetative composition (Action 93, 95, 100, 107) may inadvertently benefit the experimental populations of the black footed ferret through improve habitat conditions. No negative effects are anticipated.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in greater sage-grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to

coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Because only experimental populations of black footed ferret exist in the state of Wyoming, wild horse management actions would not affect extirpated endangered black footed ferret (USFWS 2013). Experimental populations of black footed ferret have not been identified in herd management areas within the planning area. Wild horse management actions include measures which are meant to protect and preserve sage-grouse habitat. As a result, wild horse management actions are not likely to affect experimental populations of black footed ferret.

Wildland Fire

Wildland fire management actions described in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

Because only experimental populations of black footed ferret exist in the state of Wyoming, wildland fire management actions would not affect extirpated endangered black footed ferret (USFWS 2013). Wildland fire management actions intended to protect sage-grouse may occur in the same habitats used by the experimental populations of the black footed ferret. As such, activities listed under this management program would likely also benefit black footed ferret because they can be found in similar habitats.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring (Actions 1, 3, 125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15, 21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Because only experimental populations of black footed ferret exist in the state of Wyoming, wildlife and fisheries management actions would not affect extirpated endangered black footed ferret (USFWS 2013). The changes to existing wildlife and fisheries management listed above are meant

to provide additional protective measures for the greater sage-grouse. These management actions may inadvertently benefit the species. Beneficial actions may include restrictions on oil and mineral developments, restrictions of surface disturbing activities, and increased mitigation protocol. These actions could benefit black-footed ferret and prey by protecting habitat and reducing human access, potentially reducing recreational shooting. No negative effects are anticipated.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Existing and proposed wind farms
- Timber harvesting on private lands
- Subdivision development
- Recreation
- Coal mine operations
- Transmission lines
- Seismic exploration
- Municipal dump expansions

Implementation of the Amendment would not change any potential effect s to the black footed ferret that may result from current or projected future non-Federal actions.

7.9.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and will not be analyzed in this document.

On March 6, 2013, the U.S. Fish and Wildlife Service (Service) issued a letter acknowledging 'block clearance' for the State of Wyoming in response to a request from the Wyoming Game and Fish Department. This letter provides acknowledgement that the likelihood of identifying wild ferrets in Wyoming, outside of those resulting from reintroductions, is distinctly minimal. The re-introductions occurred in the Rawlins field office. The letter, and the analysis provided by the Wyoming Game and Fish Department, notes that despite improvements in knowledge, technology, survey techniques, and use of reward programs, there have been no verified reports of any extant black-footed ferret individuals or populations in any prairie dog complex since the discovery of a wild black-footed ferret population in 1981. It further states that it is unlikely that black-footed ferret populations in Wyoming have persisted through drastic reductions of prairie dog complexes, and that the black-footed ferret populations have not rebounded as prairie dog complexes have begun to expand again. Consequently, the Service no longer recommends surveys for the black-footed ferrets in either black- or white-tailed prairie dog towns in the State of Wyoming.

Because it has been determined by the USFWS (USFWS 2013), the likelihood of identifying wild ferrets in Wyoming, outside of those resulting from reintroductions is minimal, implementation of the Amendment, would have "**No Effect**" on the extirpated, non-experimental populations of black footed ferret within the Bridger Teton, Pinedale, Kemmerer, Rawlins, Medicine-Bow, Casper, Rock Springs, Thunder Basin and Newcastle Field Offices.

Management actions included in the Amendment are largely supportive in nature, and guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and habitat for the sage-grouse. Management actions included in the Amendment such as increased monitoring, data collection, greater coordination and review, and noise, distance, and timing restrictions, would have no effect on the black footed ferret. In addition, some of the measures meant to protect sage-grouse may also indirectly protect the black footed ferret. Protective measures include, surface restricting actions, retentions, reclamations, road closures, reductions of pollutants, reduction of impacts and deferment of livestock grazing. Furthermore, protective conservation measures found in the Amendment and maintained as part of the existing BLM and FS RMPs would further reduce the potential for adverse effects for the species. No actions included in the Amendment are anticipated to negatively affect the black footed ferret. Based on the above analysis of effects, implementation of the Wyoming 9 plan Amendment would cause, "**No Jeopardy**" for the experimental Black footed ferret populations located within the Rawlins Field Office.

Table 12-Summary and Determination of Effects for the Black-footed ferret

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins Endangered	Rawlins Experimental	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NE	NJ	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

7.10 Canada Lynx (*Lynx canadensis*) - Threatened

7.10.1 Effects of Selected Alternative

Lands and Realty

Activities under the lands and realty program described in the Amendment include, management of sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Lands and realty management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the lands and realty management program are designed to improve and benefit sage-grouse habitat and populations. The species habitat areas do not overlap. As such, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Livestock

Livestock management actions described in the Amendment include the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

Livestock management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the livestock management program are designed to improve and benefit sage-grouse habitat and populations. The species habitat areas do not overlap. As such, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Mineral Resources

Minerals management actions described in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season (Action 60), working with permittees/lessees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Minerals resource management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the mineral resource management program are designed to improve and benefit sage-grouse habitat and populations. The species habitat areas do not overlap. As such, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Recreation
Recreation management actions describe that BLM SRPs and Forest Service Recreation SUAs would be allowed in sage-grouse PHMA habitat, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

Recreation management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the recreation management program are designed to improve and benefit sage-grouse habitat and populations. The species habitat areas do not overlap. As such, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the Canada lynx or its designated critical habitat.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Special status species management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the special status species management program are designed to improve and benefit sage-grouse habitat and populations. The species habitat areas do not overlap. As such, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Travel Management
Travel management actions included in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within greater sage-grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Travel management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the travel management program are designed to improve and benefit sage-grouse

habitat and populations. The species habitat areas do not overlap. As such, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

Vegetation management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the vegetation management program are designed to improve and benefit sage-grouse habitat and populations. The species habitat areas do not overlap. As such, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Canada lynx have not been identified within herd management areas within the planning area; however, designated critical habitat for the species does exist within herd management areas. Changes to wild horse management include measures which are meant to protect and preserve sage-grouse habitat. As such, vegetation management actions included in Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. None of these actions would affect Canada lynx or its designated critical habitat.

Wildland Fire

Wildland fire management actions described in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive

species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions which benefit sage-grouse during fire suppression activities (Action 124).

The changes to existing wildland fire management listed are meant to provide additional protective measures for the Greater Sage-Grouse. As such, management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the wildland fire management program are designed to improve and benefit sage-grouse habitat and populations. The species habitat areas do not overlap. Therefore, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring(Actions 1, 3, 125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15, 21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17, 131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

The changes to existing wildlife and fisheries management listed are meant to provide additional protective measures for the Greater Sage-Grouse. As such, management actions included in the Amendment would not occur in Canada lynx occupied habitat. Canada lynx occupy Montane and subalpine coniferous forests above 4,000 feet. Activities conducted under the wildlife and fisheries management program are designed to improve and benefit sage-grouse habitat and populations. The species habitat areas do not overlap. Therefore, activities listed under this management program would not affect Canada lynx or its designated critical habitat.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Livestock grazing on private lands

- Timber harvesting on private lands
- Subdivision development
- Recreation
- Coal mine operations
- Transmission lines
- Seismic exploration

Implementation of the Amendment would not change any potential effects to the Canada lynx, or its designated critical habitat, that may result from current or projected future non-Federal actions.

7.10.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and will not be analyzed in this document.

Management actions included in the Amendment are largely supportive in nature and guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and habitat for the sage-grouse. Management actions included in the Amendment such as increased monitoring, data collection, greater coordination and review, and noise, distance, and timing restrictions, would have no effect on the Canada lynx because no surface disturbing actions would occur. Although unlikely, some of the measures meant to protect sage-grouse may indirectly benefit the Canada lynx. The Montane and subalpine coniferous forests habitats where Canada lynx habitat exists are not used by sage-grouse. Activities conducted under the Amendment are designed to improve and benefit Greater Sage-Grouse habitat and populations. The species habitat areas do not overlap. Because no negative affects to the Canada lynx would occur and any actions which may benefit the species are unlikely, implementation of the Amendment, would have "**No Effect**" on the Canada lynx or its designated critical habitat within the Bridger Teton, Pinedale, Kemmerer, Rawlins, Medicine-Bow, Casper, Rock Springs, Thunder Basin and Newcastle Field Offices.

Table 13-Summary and Determination of Effects for the Canada lynx and Critical Habitat

Program	Bridger Teton	Bridger Teton Critical	Pinedale	Pinedale Critical	Kemmerer	Kemmerer Critical	Rock Springs	Rock Springs Critical	Rawlins	Rawlins Critical	Medicine Bow	Medicine Bow Critical	Casper	Casper Critical	Thunder Basin	Thunder Basin Critical	Newcastle	Newcastle Critical
Lands and Realty	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Livestock	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Recreation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Vegetation	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect (No Adverse Modification for critical habitat)
NJ = No Jeopardy

7.11 Grizzly Bear (*Ursus arctos*) - Threatened

7.11.1 Effects of Selected Alternative

Lands and Realty
Activities under the lands and realty program include, managing sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in Greater Sage-Grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of greater sage-grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

The changes to existing lands and realty management listed are meant to provide additional protective measures for the greater sage-grouse. Management actions included in the Amendment would not directly occur in grizzly bear occupied habitat. Grizzly bear are highly adaptable and utilize a variety of habitats but within Wyoming, they prefer extensive forest cover often interspersed with grasslands and meadows. In Wyoming these habitats are generally above 1,500 m (Schwartz et al. 2002).

Some sagebrush dominated stands may be located adjacent to grizzly bear habitats. Although unlikely, changes in some of the lands and realty management actions may inadvertently protect the species through land acquisitions, retentions, and reclamations. Restrictions of right-of-way corridors could also benefit the species by reducing ground disturbances in habitat occupied by grizzly bear. Road closures would reduce the number of people within grizzly bear habitat and the resulting impacts on the species, prey and habitat.

Livestock
Many of the livestock management actions in the Amendment include habitat improvements for Greater Sage-Grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat (Action 45), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

The changes to existing livestock management are meant to provide additional protective measures for the Greater Sage-Grouse. Management actions included in the Amendment would not directly occur in Grizzly bear occupied habitat. Grizzly bear are highly adaptable and utilize a variety of habitats but within Wyoming, they prefer extensive forest cover often interspersed with grasslands and meadows. In Wyoming these habitats are generally above 1,500 m Schwartz et al. 2002). Actions such as better coordination and planning with other agencies and stakeholders including Actions 22, 45, 48, 49, 53, 54, 56, 57) would not affect the species because no on the ground action would take place. Although unlikely, other changes such as the development

of a drought contingency plan (Action 52), and the promotion of balanced grazing (Action 55) could benefit grizzly bear as well as sage-grouse.

Mineral Resources
Minerals management actions described in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse(Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season(Action 60), working with permittees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Planning measures which consider the construction of a master a plan for development or leasing when impacts to sage-grouse could occur (Action 66), noise, timing and distance restrictions (Action 60) and implementing a reclamation bond in sage-grouse areas (Action 66) would not affect grizzly bear because no on the ground actions would take place.

Although unlikely, because the species may occur in the same geographical area, some management actions may indirectly benefit the species. Beneficial actions may include limitations or exclusion of road developments, minimization and avoidance of surface disturbances, minimization of habitat fragmentation, and implementing measures to reduce pollutants. These actions could reduce overall impacts and limit road access within or leading to grizzly bear habitat which would benefit the species.

Recreation
Changes to existing recreation management include BLM SRPs and Forest Service Recreation SUAs would be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in this document and the area which needs to be consulted, would be the closing of SRP's and SUA's in PHMAs when negative impacts cannot be mitigated. The closing of any BLM SRP or Forest Service Recreation SUA in PHMAs would not directly affect the grizzly bear because their habitat requirements differ. Any negative affects to grizzly bear resulting from recreation management are unlikely.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect grizzly bear.

Special Status Species
Special status species management actions include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Actions included in the special species management program such as the collection of data (Action 4), agencies meeting annually to coordinate sage-grouse data (Action 16), and the development of adaptive management strategies (Action 137), retainment of existing plans unless modified in the Amendment (Action 25), would not have any effect on grizzly bear because no surface disturbing action would occur.

Action 12 which includes the modification of existing notices and plans to minimally impact PHMAs may indirectly benefit the species by reducing impacts to PHMAs. However, because grizzly bear utilize a variety of habitat throughout the year and are so highly adaptable, any negative affects to the species are unlikely.

Travel Management

Travel management actions described in the Amendment include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within Greater Sage-Grouse habitat(Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Travel management actions such as the minimization, reclamation, avoidance, restriction and closure of various roads may inadvertently benefit the species even though Greater Sage-Grouse do not occur in the same habitat as grizzly bear (Action 18, 86, 88, 89). For example, grizzly bear may be protected if a road restriction or closure in sage-grouse habitat blocks access to a road which leads to grizzly bear habitat. However, because grizzly bear utilize a variety of habitat throughout the year and are so highly adaptable, any negative affects to the species are unlikely.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the changes in the Amendment would direct managers to use updated sage-grouse

information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

Vegetation management actions would not directly occur in Grizzly bear occupied habitat. Grizzly bear are highly adaptable and utilize a variety of habitats but within Wyoming, they prefer extensive forest cover often interspersed with grasslands and meadows. In Wyoming these habitats are generally above 1,500 m Schwartz et al. 2002). Vegetation management actions such as season of use restrictions (Action 6), monitoring efforts (Action 9), and working collaboratively with various agencies (Action 22) are not expected to directly or indirectly impact occupied grizzly bear habitat. Although unlikely, actions that minimize the potential for the spread of noxious and invasive weeds (Action 9), deferment of livestock (Action 97), and the improvement of vegetative composition (Action 93, 95, 100, 107) may inadvertently benefit grizzly bear through improved habitat conditions.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMA (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Grizzly bear have not been identified in herd management areas within the planning area. Wild horse management actions include measures which are meant to protect and preserve sage-grouse habitat. As a result, changes to existing wild horse management would not affect grizzly bear.

Wildland Fire

Wildland fire management actions described in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

Wildland fire management actions would not directly occur in grizzly bear occupied habitat. Grizzly bear are highly adaptable and utilize a variety of habitats but within Wyoming, they prefer extensive forest cover often interspersed with grasslands and meadows. In Wyoming these habitats are generally above 1,500 m Schwartz et al. 2002). Although unlikely, because the grizzly bear may occur in the same geographical area as sage-grouse, some wildland fire management actions such as habitat restorations and post fuel treatments may inadvertently affect the species.

Wildlife and Fisheries
Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring(Actions 1, 3, 125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15, 21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5,7,128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Wildlife and fisheries management actions would not directly occur in grizzly bear occupied habitat. Grizzly bear are highly adaptable and utilize a variety of habitats but within Wyoming, they prefer extensive forest cover often interspersed with grasslands and meadows. In Wyoming these habitats are generally above 1,500 m (Schwartz et al. 2002). Because Greater Sage-Grouse generally do not reside in the same habitat required by grizzly bear, management actions intended to protect sage-grouse would not directly affect grizzly bear. Although unlikely, because the species may occur in the same geographical area, some management actions may inadvertently benefit the species. Beneficial actions may include restrictions on oil and mineral developments, restrictions of surface disturbing activities, and increased mitigation protocol. No negative effects from wildlife and fisheries activities are anticipated.

Cumulative Effects
Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Livestock grazing on private lands
- Timber harvesting on private lands
- Subdivision development
- Recreation
- Coal mine operations
- Transmission lines
- Seismic exploration
- Bentonite and gypsum mining

Implementation of the Amendment would not change any potential effects to the grizzly bear that may result from current or projected future non-Federal actions.

7.11.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and will not be analyzed in this document.

Management actions included in the Amendment are largely supportive in nature, and guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and

habitat for the sage-grouse. Management actions included in the Amendment which are specific to sage-grouse such as increased monitoring, data collection, greater coordination and review, and timing restrictions, would have no negative effects on grizzly bear because no surface disturbing actions would occur. Activities included in the Amendment are not anticipated to negatively affect the species, however some beneficial effects, described above, could occur. Most of the habitats where grizzly bear habitat exists are not used by sage-grouse, however there is overlap where both species might be found. Activities conducted under the Amendment are designed to improve and benefit Sage-grouse habitat and populations. Because no negative affects to grizzly bear would occur and some actions may benefit the species, implementation of the Amendment May affect, but is not likely to Adversely Affect the grizzly bear, within the Rock Springs, Bridger Teton, Kemmerer, and Pinedale office areas. Because grizzly bear habitat does not exist in the Casper, Rawlins, Newcastle, Medicine Bow and Thunder Basin offices, management actions from this amendment are expected to have "No Effect" on grizzly bear in those office areas.

Table 14-Summary and Determination of Effects for Grizzly bear

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE
Livestock	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE
Mineral Resources	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE
Recreation	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NE	NE	NE	NE	NE
Transportation and Access	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE
Vegetation	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE
Wildlife and Fisheries	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

7.12 Preble's Meadow Jumping Mouse (*Zapus hudonius preblei*) - Threatened

7.12.1 Effects of Selected Alternative

Lands and Realty
Activities under the lands and realty program include, manage sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in Greater Sage-Grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in greater sage-grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of greater sage-grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Lands and realty management actions included in the Amendment are not likely to occur in the wetland habitats of the Preble's meadow jumping mouse because Greater Sage-Grouse occur in lands dominated by large sagebrush stands. However, sagebrush dominated stands may be located adjacent to wetland habitats. Although unlikely because overlapping habitat between Preble's meadow jumping mouse and sage-grouse is so minimal, changes in some of the lands and realty management actions included in the Amendment may inadvertently protect the species through land acquisitions, retentions, and reclamations. Restrictions of right-of-way corridors could also benefit the species by reducing ground disturbances in habitat occupied by the Preble's meadow jumping mouse. Road closures would reduce the number of people within Preble's meadow jumping mouse habitat and the resulting impacts on the species and habitat.

Livestock
Many of the livestock management actions in the amendment include habitat improvements for Greater Sage-Grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46,139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

All of the documented occurrences of Preble's meadow jumping mouse reside within riparian habitats in Wyoming. Many of the livestock management actions require no surface disturbing activities (Actions 22, 45, 48, 49, 53, 54, 56 and 57) and would therefore, not affect Preble's meadow jumping mouse. Although unlikely because overlapping habitat between Preble's meadow jumping mouse and sage-grouse is so minimal, other livestock management actions may indirectly protect the species through the development of a drought contingency plan (Action 52), which could reduce grazing pressure in nearby Preble's meadow jumping mouse habitats and the promotion of balanced grazing (Action 55) which could also alleviate heavy grazing impact in one specific area.

Mineral Resources
Minerals management actions described in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within

sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season (Action 60), working with permittees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Planning measures which consider the construction of a master a plan for development or leasing when impacts to sage-grouse could occur (Action 66), noise, timing and distance restrictions (Action 60) and implementing a reclamation bond in sage-grouse areas (Action 66) would not affect the Preble's meadow jumping mouse because no surface disturbing actions would occur.

Although unlikely, because the species may occur in the same geographical area, some management actions may indirectly benefit the species. Beneficial actions may include limitations or exclusion of road developments, minimization and avoidance of surface disturbances, minimization of habitat fragmentation, and implementing measures to reduce pollutants. These actions could reduce overall impacts and limit road access within or leading to Preble's meadow jumping mouse habitat which would benefit the species.

Recreation
BLM SRPs and Forest Service Recreation SUAs would be continued to be allowed in sage-grouse PHMA habitat, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in this document and the area which needs to be consulted on would be the closing of SRP's and SUA's in PHMAs sage-grouse habitats when negative impacts cannot be mitigated. The closing of any BLM SRP or Forest Service Recreation SUA in PHMAs would not directly affect Preble's meadow jumping mouse. Any indirect negative effects are unlikely because habitat overlap is minimal.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the Preble's meadow jumping mouse.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Actions included in the special species management program such as the collection of data (Action 4), agencies meeting annually to coordinate sage-grouse data (Action 16), and the development of adaptive management strategies (Action 137), retainment of existing plans unless modified in the Amendment (Action 25), would not have any effect on the Preble's meadow jumping mouse because surface disturbing actions would not result from these activities. However, although unlikely, Action 12 which includes the modification of existing notices and plans to minimally impact PHMAs may indirectly benefit the species by reducing impacts to

PHMAs. The reduction of impacts in PHMAs may also indirectly benefit Preble's meadow jumping mouse which may occur in nearby habitats.

Travel Management

Travel management actions described in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within greater sage-grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Travel management actions such as the minimization, reclamation, avoidance, restriction and closure of various roads may inadvertently benefit the species even though Greater Sage-Grouse do not occur in the same habitat as Preble's meadow jumping mouse (Action 18, 86, 88, 89). For this reason any indirect effects to the Preble's meadow jumping mouse resulting from Amendment actions is not likely to occur. Preble's meadow jumping mouse may be protected if a road restriction or closure in sage-grouse habitat blocks access to a road which leads to occupied habitat. No negative effects resulting from travel management are anticipated to occur.

Vegetation

Vegetation management actions include the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the changes in the Amendment would direct managers to use updated sage-grouse information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

Vegetation management actions such as season restrictions (Action 6), monitoring efforts (Action 9), and working collaboratively with various agencies (Action 22) are not expected to directly or indirectly impact

occupied Preble's meadow jumping mouse habitat because no surface disturbing actions would occur. However, actions that minimize the potential for the spread of noxious and invasive weeds (Action 9), deferment of livestock (Action 97), and the improvement of vegetative composition (Action 93, 95, 100, 107) may inadvertently benefit the species through improve habitat conditions.

Wild Horses

Wild horse management actions include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Based on known locations Preble's meadow jumping mouse as shown on USFWS maps (USFWS 2013), none of the known Preble's meadow jumping mouse sites are located in herd management areas. None of these actions would occur within or near Preble's meadow jumping mouse habitat because wild horse HMA's do not occur within Preble's meadow jumping mouse habitat.

Wildland Fire

Wildland fire management actions described in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

Wildland fire management actions are not expected to directly impact occupied or potential Preble's meadow jumping mouse habitat. Preferred habitat for the Preble's meadow jumping mouse is comprised of well-developed riparian habitat with adjacent, relatively undisturbed, grassland communities and a nearby water source, which generally do not burn. Any beneficial effects resulting from wildland fire management actions are not anticipated to negatively affect the Preble's meadow jumping mouse.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring(Actions 1, 3, 125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15, 21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5, 7, 128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133,

134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Because Greater Sage-Grouse do not reside in the same habitat required by Preble's meadow jumping mouse, management actions intended to protect sage-grouse would not directly affect Preble's meadow jumping mouse. However, although unlikely, because the species may occur in the same geographical area, some management actions may indirectly benefit the species. Beneficial actions may include restrictions on oil and mineral developments, restrictions of surface disturbing activities, and increased mitigation protocol. Other management non-surface disturbing management actions such as the implementation of timing restrictions (Actions 17, 131, 132, 133 and 134) would have no effect on Preble's meadow jumping mouse.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Subdivision development along rivers
- Recreation along rivers and river corridors (including camping, rafting, and hunting)
- Transmission lines

Implementation of the Amendment would not change any potential effects to the Preble's meadow jumping mouse that may result from current or projected future non-Federal actions.

7.12.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and will not be analyzed in this document.

Management actions included in the Amendment are largely supportive in nature, and guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and habitat for the sage-grouse. Management actions included in the Amendment such as increased monitoring, data collection, greater coordination and review, and noise, distance, and timing restrictions, would have no effect on Preble's meadow jumping mouse because no surface disturbing actions would occur. Activities included in the Amendment are not anticipated to affect the species. The wetland habitats where Preble's meadow jumping mouse exists are not typically used by sage-grouse. Activities conducted under the Amendment are designed to improve and benefit Sage-grouse habitat and populations. Because no affects to Preble's meadow jumping mouse would occur and any actions which may directly or indirectly benefit the species are unlikely, implementation of the Amendment would have "**No Effect**" on the Preble's meadow jumping mouse, within the Bridger Teton, Pinedale, Kemmerer, Casper, Rock Springs, Thunder Basin and Newcastle Field Offices. Due to the possibility of beneficial effects to the Preble's mouse, implementation of the Amendment would lead to a determination of "May Affect, Not Likely to Adversely Affect for the Preble's mouse in the Rawlins and Medicine Bow field office areas.

Table 15-Summary and Determination of Effects for the Preble's Meadow Jumping Mouse

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Livestock	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Mineral Resources	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Recreation	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Special Designations	NE	NE	NE	NE	NE	NE	NE	NE	NE
Special Status Species	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Transportation and Access	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Vegetation	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Watershed and Water Quality	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Wild Horses	NE	NE	NE	NE	NE	NE	NE	NE	NE
Wildland Fire	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE
Wildlife and Fisheries	NE	NE	NE	NE	NLAA	NLAA	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

7.13 Western yellow-billed cuckoo (*Coccyzus americanus*) - Threatened

7.13.1 Effects of Selected Alternative

Lands and Realty

Activities under the lands and realty program described in the Amendment include, management of sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Lands and realty management actions included in the Amendment are not likely to occur in the wetland habitats of the Western yellow-billed cuckoo. Greater Sage-Grouse occur in lands dominated by large sagebrush stands and two hectares of dense riparian vegetation is considered the absolute minimum size for cuckoo occupancy, as no cuckoos have been detected successfully nesting in patches smaller than two hectares."(Corman and Magill 2000, Halterman et al 2001).

However, sagebrush dominated stands may be located adjacent to wetland habitats. Although unlikely, changes in some of the lands and realty management actions included in the Amendment may indirectly protect Western yellow-billed cuckoo through land acquisitions, retentions, and reclamations. Restrictions of right-of-way corridors could also benefit the species by reducing ground disturbances in habitat occupied by Western yellow-billed cuckoo. Road closures would reduce the number of people within Western yellow-billed cuckoo habitat and the resulting behavioral disruption impacts on the species and its proposed critical habitat.

Livestock

Livestock management actions described in the Amendment include the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

Two hectares of dense riparian vegetation is considered the absolute minimum size for cuckoo occupancy, as no cuckoos have been detected successfully nesting in patches smaller than two hectares."(Corman and Magill 2000, Halterman et al 2001). Because Greater Sage-Grouse occur in lands dominated by large sagebrush stands, livestock management actions meant to benefit sage-grouse would not occur in Western yellow-billed cuckoo habitat. Actions that would not affect Western yellow-billed cuckoo include Action 22, 45, 48, 49, 53, 54, 56, 57. Although unlikely, changes in some of the Livestock management program may indirectly protect the species through the development of a drought contingency plan (Action 52), which could reduce grazing pressure near Western yellow-billed cuckoo habitats; the promotion of balanced grazing (Action 55) could also alleviate heavy grazing impact in wetland areas.

Mineral Resources

Minerals management actions included in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season (Action 60), working with permittees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a),

minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Planning measures which consider the construction of a master a plan for development or leasing when impacts to sage-grouse could occur (Action 66), requiring reclamation plans (Action 69a), noise, timing and distance restrictions (Action 60) and implementing a reclamation bond in sage-grouse areas (Action 66) would not affect Western yellow-billed cuckoo or its proposed critical habitat because no surface disturbing actions would occur.

Two hectares of dense riparian vegetation is considered the absolute minimum size for cuckoo occupancy, as no cuckoos have been detected successfully nesting in patches smaller than two hectares."(Corman and Magill 2000, Halterman et al 2001). Because greater sage-grouse do not reside in the same habitat required by Western yellow-billed cuckoo, management actions intended to protect sage-grouse would not directly affect Western yellow-billed cuckoo. Although unlikely, because the species may occur in the same geographical area, some management actions may inadvertently benefit the species. Beneficial actions may include limitations of road developments and implementing measures to reduce pollutants. These actions could limit road access within Western yellow-billed cuckoo habitat which would benefit the species. It is not anticipated that the management actions would negatively affect the species or its proposed critical habitat.

Recreation
Recreation management actions include BLM SRPs and Forest Service Recreation SUAs would be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in the Amendment and the area which needs to be consulted, would be the closing of SRP's and SUA's in PHMAs sage-grouse habitats when negative impacts cannot be mitigated. The closing of any BLM SRP or Forest Service Recreation SUA in PHMAs would not directly affect the Western yellow-billed cuckoo. Although unlikely, the closing of SRP's and SUA's may benefit the species and protect it and its proposed critical habitat from negative recreation impacts.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the Western yellow-billed cuckoo or its proposed critical habitat.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Actions included in the special species management program such as the collection of data (Action 4), agencies meeting annually to coordinate sage-grouse data (Action 16), and the development of adaptive management strategies (Action 137), retainment of existing plans unless modified in the Amendment (Action 25), would not have any effect on the Western yellow-billed cuckoo or its proposed critical habitat because no surface disturbing actions would occur as a result of these management actions.

However, Action 12 which includes the modification of existing notices and plans to minimally impact PHMAs may indirectly benefit the species by reducing impacts to PHMAs. Although unlikely, the reduction of impacts in PHMAs may also indirectly benefit Western yellow-billed cuckoo which may occur in adjacent habitats.

Travel Management

Travel management actions included in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within Greater Sage-Grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Although unlikely, travel management actions such as the minimization, reclamation, avoidance, restriction and closure of various roads may inadvertently benefit the species even though Greater Sage-Grouse do not occur in the same habitat as Western yellow-billed cuckoo (Action 18, 86, 88, 89). For example, Western yellow-billed cuckoo may be protected if a road restriction or closure in sage-grouse habitat blocks access to a road which leads to wetland habitat. The use of approved seed mixtures (Action 92) and implementation of travel management plans (Action 18) would likely have no effect on the Western yellow-billed cuckoo or its proposed critical habitat.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the changes in the Amendment would direct managers to use updated sage-grouse information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

Vegetation management actions are not expected to directly impact occupied or potential Western yellow-billed cuckoo habitat. Two hectares of dense riparian vegetation is considered the absolute minimum size for cuckoo occupancy, as no cuckoos have been detected successfully nesting in patches smaller than two hectares."(Corman and Magill 2000, Halterman et al 2001). Vegetation management actions such as season restrictions (Action 6), monitoring efforts (Action 9), and working collaboratively with various agencies (Action 22) are not expected to directly or indirectly impact occupied or potential Western yellow-billed cuckoo habitat or its proposed critical habitat because no surface disturbing actions would occur. However, although unlikely, actions that minimize the potential for the spread of noxious and invasive weeds (Action 9), deferment of livestock (Action 97), and the improvement of vegetative composition (Action 93, 95, 100, 107) may inadvertently and indirectly benefit the species through improved habitat conditions.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Based on known locations of Western yellow-billed cuckoo as shown on USFWS maps (USFWS 2013), none of the known Western yellow-billed cuckoo sites are located in herd management areas. As a result, no impacts from wild horse management are anticipated to occur to the species or its proposed critical habitat.

Wildland Fire

Wildland fire management actions included in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions which benefit sage-grouse during fire suppression activities (Action 124).

Changes to existing wildland fire management are not expected to directly impact occupied or potential Western yellow-billed cuckoo habitat. Two hectares of dense riparian vegetation is considered the absolute minimum size for cuckoo occupancy, as no cuckoos have been detected successfully nesting in patches smaller than two hectares (Corman and Magill 2000, Halterman et al 2001). Because greater sage-grouse do not reside in the same habitat required by Western yellow-billed cuckoo, most of the wildland fire management actions intended to protect sage-grouse would not affect Western yellow-billed cuckoo or its proposed critical habitat. No planned surface disturbing wildland fire management actions (i.e. prescribed fire) would occur without proper analysis and implementation of all appropriate conservation measures in order to ensure the protection of the Western yellow-billed cuckoo. It is anticipated that new proposals of fire management actions would result.

Wildlife and Fisheries
Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring (Actions 1, 3, 125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15, 21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5, 7, 128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Because Greater Sage-Grouse do not reside in the same habitat required by Western yellow-billed cuckoo, management actions intended to protect sage-grouse would not directly affect Western yellow-billed cuckoo. However, because the species may occur in the same geographical area, some management actions may inadvertently benefit Western yellow-billed cuckoo. Beneficial actions may include, limitation of oil and gas development densities, restrictions of surface disturbing activities, and increased mitigation protocol. Other management actions such as the implementation of noise restrictions (Action 135) and timing restrictions (Actions 17, 131, 132, 133 and 134) would have no effect on Western yellow-billed cuckoo or its proposed critical habitat.

Cumulative Effects
Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Subdivision development along rivers
- Recreation along rivers and river corridors (including camping, rafting, and hunting)
- Transmission lines

Implementation of the Amendment would not change any potential effects to Western yellow-billed cuckoo or its proposed critical habitat that may result from current or projected future non-Federal actions.

7.13.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and would not be analyzed in this document.

Management actions included in the Amendment are largely supportive in nature, and guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and habitat for the sage-grouse. Management actions included in the Amendment such as increased monitoring, data collection, greater coordination and review, and noise, distance, and timing restrictions, would have no effect on Western yellow-billed cuckoo because no surface disturbing actions would occur. Western yellow-billed cuckoo occur in dense riparian vegetation. As such, Greater Sage-Grouse actions would not occur in

Western yellow-billed cuckoo habitat. Although unlikely, some of the measures meant to protect sage-grouse may indirectly benefit Western yellow-billed cuckoo. Activities included in the Amendment are not anticipated to negatively affect the species. Activities conducted under the Amendment are designed to improve and benefit sage-grouse habitat and populations. Because no negative affects to Western yellow-billed cuckoo would occur and any actions which may directly benefit the species are unlikely, implementation of the Amendment would lead to a determination of **"May Affect, Not Likely to Adversely Affect**" to Western yellow-billed cuckoo, within the Bridger Teton, Pinedale, Kemmerer and Rock Springs Field office portions planning area, as well as a "**No destruction or adverse Modification**" to proposed critical habitat in the Rock Springs Field Office area. Because no habitat for the western yellow-billed cuckoo has been identified, and they are not expected to occur in the Rawlins, Medicine Bow, Casper, Thunder Basin and Newcastle portions of the planning area, implementation of the Amendment would have "**No effect**" on the species in those areas.

Table 16-Summary and Determination of Effects for the Western yellow-billed cuckoo

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rock Springs Proposed Critical habitat	Rawlins	Medicine	Casper	Thunder Basin	Newcastle
Lands and Realty	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Livestock	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Mineral Resources	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Recreation	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Special Designations	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Special Status Species	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Transportation and Access	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Vegetation	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Watershed and Water Quality	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Wild Horses	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Wildland Fire	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE
Wildlife and Fisheries	NLAA	NLAA	NLAA	NLAA	NE	NE	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect (No Adverse Modification for critical habitat)

7.14 Northern Long Eared Bat (*Myotis septentrionalis*) - Proposed

The Northern long-eared bat is currently proposed for listing (78 FR 61046) with a proposed 4(d) rule (80 FR 2371). The US Fish and Wildlife Service is accepting comments on the proposed rule through March 17, 2015. Because it is possible that listing of this species, with or without a proposed 4(d) rule could occur within the timeframe for consideration of a final record of decision (ROD) for the Amendment, this BA provides analysis and determinations consistent with a fully listed species. This BA then documents consideration of any potential for effect and determines that the Amendment would have no effect on the northern long-eared bat. Pertinent analysis and details of rationale for no effect determinations are offered below for informational purposes. Because there are no anticipated effects to the northern long-eared bat from the Amendment, the determination as a proposed species is that the Amendment will also not jeopardize the species if it were to remain proposed during the decision-making process.

7.14.1 Effects of Selected Alternative

Lands and Realty
Activities under the lands and realty program described in the Amendment include, management of sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in Greater Sage-Grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in Greater Sage-Grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of Greater Sage-Grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

Lands and realty management actions included in the Amendment are not likely to occur in the habitats of the northern long-eared bat. Greater Sage-Grouse occur in lands dominated by large sagebrush stands, while northern long-eared bats utilize forested areas, caves, crevices and other roosting habitat. However, sagebrush dominated stands may be located adjacent to some of these habitats. Although unlikely, changes in some of the lands and realty management actions included in the Amendment may indirectly protect northern long-eared bats through land acquisitions, retentions, and reclamations. Restrictions of right-of-way corridors could also benefit the species by reducing habitat loss and ground disturbances in habitat occupied by northern long-eared bat. Road closures would reduce the number of people within northern long-eared bat habitat and likewise, reduce potential for human disturbance on the species and its habitat. Because these bats are vulnerable to human activity, reducing disturbances maintains the suitability of northern long-eared bat habitat.

Livestock
Livestock management actions described in the Amendment include the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve

sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

The changes to existing livestock management are meant to provide additional protective measures for the greater sage-grouse. Management actions included in the Amendment would not directly occur in northern long-eared bat habitat. Northern long-eared bats forage mostly in forested areas, but may also utilize edge habitats for foraging or for commuting along open areas (Henderson and Broders 2008; Jantzen and Fenton 2013). They roost in trees, buildings and crevices and their hibernacula include caves and mines. Actions such as better coordination and planning with other agencies and stakeholders including Actions 22, 45, 48, 49, 53, 54, 56, 57) would not negatively affect or jeopardize the species because no on the ground action would take place. Although unlikely, other changes such as the development of a drought contingency plan (Action 52), and the promotion of balanced grazing (Action 55) could benefit northern long-eared bats as well as sage-grouse. Maintaining healthy conditions in upland and edge habitats will provide northern long-eared bats with suitable areas for foraging and roosting.

Mineral Resources

Minerals management actions included in the Amendment include the following: designing any new roads to minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season (Action 60), working with permittees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Because sage-grouse do not reside in the same habitat required by the northern long-eared bat, management actions intended to protect sage-grouse would not jeopardize the northern long-eared bat. Although unlikely, some management actions may inadvertently benefit the species because they may occur in the same geographical area. Beneficial actions may include limitations of road developments and implementing measures to reduce pollutants. These actions could limit road access within northern long-eared bat habitat which would prevent forest clearing and construction related disturbances, thereby maintaining contiguous tracts of forested habitat. It is not anticipated that the management actions would negatively affect the species.

Recreation

Recreation management actions include BLM SRPs and Forest Service Recreation SUAs would be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in the Amendment and the area which needs to be consulted would be the closing of SRP's and SUA's in PHMAs when negative impacts cannot be mitigated. The closing of any BLM SRP or Forest Service recreation SUA in PHMAs would not directly affect the northern long-eared bat. Although unlikely, the closing of SRP's and SUA's may benefit the species by limiting recreation activities which may adversely affect habitat or cause disturbance, such as hiking and ORV use. This would prevent stressing bats and dispersal of current inhabitants to other areas.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the northern long-eared bat.

Special Status Species
Special status species management action include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Actions in the special status species management program include the collection of data (Action 4), annual agency meetings to coordinate sage-grouse data (Action 16), and the development of adaptive management strategies (Action 137). Existing plans will be retained unless modified in the Amendment (Action 25). These actions would not have any effect on the northern long-eared bat because no surface disturbing actions would occur as a result of these management actions.

Action 12, which includes the modification of existing notices and plans to minimally impact PHMAs, may indirectly benefit the species by reducing impacts to PHMAs. Although unlikely, the reduction of impacts in PHMAs may also indirectly benefit northern long-eared bat which may occur in adjacent habitats.

Travel Management
Travel management actions included in the Amendment, include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within Greater Sage-Grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Travel management actions such as the minimization, reclamation, avoidance, restriction and closure of various roads should have no effect on the species because Greater Sage-Grouse do not typically occur in the same habitat as northern long-eared bat (Action 18, 86, 88, 89). The use of approved seed mixtures (Action 92) and implementation of travel management plans (Action 18) would likely have no effect on the northern long-eared bat.

Vegetation
Vegetation management actions include; the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6); design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9); vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11); work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22); improvement of

vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107); restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94); development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96); deferment of livestock grazing on vegetative treatments to improve habitat (Action 97); recommendations on vegetative treatments (Action 98, 100, 101, 104, 105); reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106); the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104); pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the changes in the Amendment would direct managers to use updated sage-grouse information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

The changes to existing vegetation management listed are meant to provide additional protective measures for the Greater Sage-Grouse. As such, management actions included in the Amendment would not occur in northern long-eared bat habitat. Northern long-eared bats typically forage in deciduous and coniferous forests, roost in trees, buildings and crevices, and hibernate in caves and mines. Activities conducted under the vegetation management program are designed to improve and benefit Greater Sage-Grouse habitat and populations. The species habitat areas do not typically overlap. Therefore, activities listed under this management program would not adversely affect the northern long-eared bat because their habitat requirements differ significantly from sage-grouse.

Wild Horses

Wild horse management actions include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMAs (Action 109), considering sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and coordinating with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

There are no wild horse Herd Management Areas that overlap with known northern long-eared bat habitat in Wyoming. As a result, no impacts from wild horse management are anticipated to occur.

Wildland Fire

Wildland fire management actions in the Amendment include fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26); additions and updates to sage-grouse Landscape Wildfire & Invasive Species Assessments, which are necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27); implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28); utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29); fuel treatment implementation with an emphasis on protecting and enhancing PHMAs (Action 114); restoring burned areas within PHMAs (Action 115); design post fuels management projects to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117); avoiding treatments in areas containing old trees

or persistent woodlands (Action 118), and management actions which benefit sage-grouse during fire suppression activities (Action 124).

The changes to existing wildland fire management listed are meant to provide additional protective measures for the Greater Sage-Grouse. As such, management actions included in the Amendment would not occur in northern long-eared bat habitat. Northern long-eared bats typically forage in deciduous and coniferous forests, roost in trees, buildings and crevices, and hibernate in caves and mines. Activities conducted under the wildland fire management program are designed to improve and benefit Greater Sage-Grouse habitat and populations. The species habitat areas do not typically overlap. Therefore, activities listed under this management program would not adversely affect the northern long-eared bat because their habitat requirements differ significantly from sage-grouse.

No surface disturbing wildland fire management actions would occur without proper analysis and implementation of all appropriate conservation measures in order to ensure the protection of the northern long-eared bat. It is anticipated that new proposals of fire management actions would result.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include; protocols for sage-grouse monitoring (Actions 1, 3, 125); development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15, 21); application of required design features (Action 10); addition of new sage-grouse habitat (Action 13); limitation of oil and gas development densities (Action 126); limitation of all surface disturbances to 5% per 640 acres (Action 127); mitigation protocol (Actions 5, 7, 128); prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMA (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMA (Action 130); timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134); promote control of predators to sage-grouse or sage-grouse habitat (Action 135); and implementation of noise restrictions (Action 136).

Because Greater Sage-Grouse do not reside in the same habitat required by the northern long-eared bat, management actions intended to protect sage-grouse would not directly affect northern long-eared bat. Other management actions such as the implementation of noise restrictions (Action 135) and timing restrictions (Actions 17, 131, 132, 133 and 134) would have no effect on northern long-eared bat.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Water depletions from irrigation diversions and dams
- Livestock grazing on private lands
- Subdivision development along rivers
- Recreation along rivers and river corridors (including camping, rafting, and hunting)
- Transmission lines

Implementation of the Amendment would not change any potential effects to northern long-eared bat that may result from current or projected future non-Federal actions.

7.14.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and would not be analyzed in this document.

Management actions included in the Amendment are largely supportive in nature, and guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and habitat for the sage-grouse. Management actions included in the Amendment such as increased monitoring, data collection, greater coordination and review, and noise, distance, and timing restrictions, would have no effect on northern long-eared bat because no surface disturbing actions would occur. Northern long-eared bats forage in deciduous and coniferous forests, and, during the summer, typically roost singly or in colonies underneath bark or in cavities or crevices of both live trees and snags. They predominantly overwinter in hibernacula that include caves and abandoned mines. As such, Greater Sage-Grouse actions would not occur in northern long-eared bat habitat. Although unlikely, some of the measures meant to protect sage-grouse may indirectly benefit the northern long-eared bat. Activities included in the Amendment are not anticipated to negatively affect the species. Activities conducted under the Amendment are designed to improve and benefit Greater Sage-Grouse habitat and populations. Because no negative affects to northern long-eared bats would occur and any actions which may directly benefit the species are unlikely, implementation of the Amendment would cause "**No Jeopardy**" to the northern long-eared bat, within the planning area.

Table 17-Summary and Determination of Effects for the Northern Long-Eared Bat

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Livestock	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Mineral Resources	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Recreation	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Special Designations	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Special Status Species	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Transportation and Access	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Vegetation	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Watershed and Water Quality	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Wild Horses	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ
Wildland Fire	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ

Wildlife and Fisheries	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ	NJ

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

7.15 Gray Wolf (*Canis lupus*) – Non-essential experimental

7.15.1 Effects of Selected Alternative

Lands and Realty
Activities under the lands and realty program include, managing sage-grouse PHMAs (Action 30), seasonal timing constraints (Action 31), restrictions which protect sage-grouse on new right-of-way corridors in greater sage-grouse habitat (Action 32), designing of powerlines and guy wires to minimize wildlife related impacts and constructed to the latest APLIC standards (Action 34, 35, 38), reclamation of sites (Action 35), prohibition of wind turbines in sage-grouse habitat (Action 36), avoidance of MET tower supports in PHMA (Action 38), retention of PHMA (Action 40), identification of sage-grouse habitat in mineral right areas or conservation easement areas (Action 41), acquisition of greater sage-grouse lands (Action 42), and consideration of non-mineral withdrawal actions to protect the species (Action 43).

The changes to existing lands and realty management listed are meant to provide additional protective measures for the Greater Sage-Grouse. Gray wolves are habitat generalists and utilize a variety of habitats but within Wyoming.

Some sagebrush dominated stands may be located within habitat utilized by gray wolves. Although unlikely, changes in some of the lands and realty management actions may inadvertently protect the species through land acquisitions, retentions, and reclamations. Restrictions of right-of-way corridors could also benefit the species by reducing ground disturbances in habitat occupied by gray wolves. Road closures would reduce the number of people within gray wolf habitat and the resulting impacts on the species, prey and habitat.

Livestock
Many of the livestock management actions in the Amendment include habitat improvements for greater sage-grouse through the following: evaluation of opportunities to coordinate management plans and strategies under a single management plan with other agencies and stake holders and include sage-grouse management (Action 22), develop voluntary grazing strategies that improve sage-grouse populations and habitat(Action 45), adjustments to grazing management (Action 46, 139), sage-grouse habitat objectives and management would be incorporated into all grazing permit renewals (Action 48), progress toward achieving land health standards in sage-grouse PHMAs (Action 49), management of voluntarily relinquished permits or preferences (Action 50), coordinate with permittees/lessees to develop drought contingency plans (Action 52), evaluate and modify existing range improvements to improve sage-grouse habitat (Action 53), designate specific routes and timeframes for trailing which includes the avoidance of stopovers in sage-grouse leks (Action 54), promote balanced grazing between upland and riparian areas (Action 55), manage range improvements in a way that promotes sage-grouse and its habitats (Action 56), and evaluate and modify effects on sage-grouse from spring and seep developments such as pipelines and structures (Action 57).

The changes to existing livestock management are meant to provide additional protective measures for the Greater Sage-Grouse. Gray wolves are habitat generalists and utilize a variety of habitats but within Wyoming. Actions such as better coordination and planning with other agencies and stakeholders including Actions 22, 45, 48, 49, 53, 54, 56, 57 would not affect the species because no on the ground action would take place.

Although unlikely, other changes such as the development of a drought contingency plan (Action 52), and the promotion of balanced grazing (Action 55) could benefit gray wolves as well as sage-grouse.

Mineral Resources
Minerals management actions described in the Amendment include the following: designing roads which minimize impacts in sage-grouse PHMAs (Action 20), protective modifications to lease stipulations within sage-grouse habitat (Action 58, 60, 61, 62, 63, 66, 68, 71, 72, 75, 77, 78, 80, 81). Other actions include, proposed withdrawal recommendations of some areas of PHMA from mineral exploration (Action 79, 139), minimization and avoidance of surface disturbances (Action 79), prohibit strip mining near sage-grouse (Action 76), prohibition of geophysical operations near sage-grouse, right-of-way and vehicle limitations, timing restrictions during breeding season (Action 60), working with permittees/lessees to apply sage-grouse conservation measures, distance limitations (Action 60, 66), requiring reclamation plans (Action 69a), minimization of habitat fragmentation (Action 62, 67), noise reduction, and minimize impacts to related sensitive resources.

Planning measures which consider the construction of a master a plan for development or leasing when impacts to sage-grouse could occur (Action 66), noise, timing and distance restrictions (Action 60) and implementing a reclamation bond in sage-grouse areas (Action 66) would not affect gray wolves because no on the ground actions would take place.

Although unlikely, because the species may occur in the same geographical area, some management actions may indirectly benefit the species. Beneficial actions may include limitations or exclusion of road developments, minimization and avoidance of surface disturbances, minimization of habitat fragmentation, and implementing measures to reduce pollutants. These actions could reduce overall impacts and limit road access within or leading to gray wolf habitat which would benefit the species.

Recreation
Changes to existing recreation management include BLM SRPs and Forest Service Recreation SUAs would be allowed in sage-grouse PHMA, unless negative impacts to sage-grouse cannot be adequately mitigated (Action 82).

The issuance of BLM SRP's and Forest Service recreation SUA's has already been consulted on during the planning process of their respective land use plans. However, the change in this document and the area which needs to be consulted, would be the closing of SRP's and SUA's in PHMAs when negative impacts cannot be mitigated. The closing of any BLM SRP or Forest Service Recreation SUA in PHMAs would not directly affect the gray wolf. Any affects to gray wolves resulting from recreation management are unlikely.

Special Designations
No new special designation actions are included in the Amendment (Action 84). As such, special management actions would not affect the gray wolf.

Special Status Species
Special status species management actions include the collection of sage-grouse baseline data during project planning (Action 4), the modification of existing notices and plans to minimally impact PHMAs (Action 12), agencies will meet annually to coordinate and review sage-grouse data (Action 16), development of adaptive management strategies in support of the population management objectives for sage-grouse (Action 137), maintain at least 67% of the 2005-2008 sage-grouse PHMA population within the State of Wyoming (Action 138), and all existing planning decision will be retained unless vacated or modified by decisions in this plan amendment (Action 25).

Actions included in the special species management program such as the collection of data (Action 4), agencies meeting annually to coordinate sage-grouse data (Action 16), and the development of adaptive management strategies (Action 137), retainment of existing plans unless modified in the Amendment (Action 25), would not have any effect on gray wolves because no surface disturbing action would occur.

Action 12 which includes the modification of existing notices and plans to minimally impact PHMAs may indirectly benefit the species by reducing impacts to PHMAs. However, because gray wolves utilize a variety of habitat throughout the year and are so highly adaptable, any affects to the species are unlikely.

Travel Management

Travel management actions described in the Amendment include restricting motorized travel to existing roads and trails, until route designations are made during subsequent implementation of travel management planning (Action 18), designate routes with priority habitat and assess existing plans for consistency with sage-grouse conservation objectives (Action 19), non-sand dune portions of the Dune Pond Cooperative Management Area within sage-grouse PHMAs would be limited to existing roads and trails (Action 86, 87), avoidance of new road construction within 1.9 miles of habitat (Action 88), restricting upgrades or new road construction within Greater Sage-Grouse habitat (Action 89), development of new roads would be constructed to the absolute minimum value (Action 90), natural reclamation of roads and trails would be allowed in travel management plans within sage-grouse PHMAs, in appropriate situations where additional resource damage is not foreseeable (Action 91), when reseeding roads and trails within sage-grouse PHMAs, appropriate seed mixtures would be used and the use of transplanted sagebrush would be considered (Action 92).

Travel management actions such as the minimization, reclamation, avoidance, restriction and closure of various roads may inadvertently benefit the species (Action 18, 86, 88, 89). For example, gray wolves may be protected if a road restriction or closure in sage-grouse habitat blocks access to a road which leads to gray wolf habitat. However, because gray wolves utilize a variety of habitat throughout the year and are so highly adaptable, any affects to the species are unlikely.

Vegetation

Vegetation management actions include, the application of seasonal restrictions for implementing vegetation management treatments and monitoring to benefit sage-grouse (Action 6), design range projects in a manner that minimizes potential for invasive species establishment and to monitor and treat invasive species associated with existing range improvements (Action 9), vegetation management would be used to control, suppress, and eradicate, where possible, noxious and invasive species (Action 11), work with various agencies and stake holders to coordinate and enhance Greater Sage-Grouse population and habitat (Action 22), improvement of vegetation composition and structure to benefit sage-grouse (Action 93, 95, 100, 107), restrict sagebrush activities that reduces sagebrush canopy to less than 15% (Action 94), development of recommended protocols and treatments to protect sage-grouse and sage-grouse habitat (Action 95, 96), deferment of livestock grazing on vegetative treatments to improve habitat (Action 97), recommendations on vegetative treatments (Action 98, 100, 101, 104, 105), reclamation or restoration of surface disturbances in sage-grouse habitats (Action 99, 100, 101, 103, 106), the use of native seeds which are certified weed free for fuels treatments (Action 100, 102, 103, 104), pest treatments to control Wyoming grasshopper and Mormon cricket outbreaks in Greater Sage-Grouse PHMAs (Action 108).

The use of herbicide on noxious and invasive species (Action 11), vegetation treatments (Actions 93, 94, 95, 100, 102, 103, 104, 105, 107) and pest control treatments for Wyoming grass hopper and Mormon crickets (Action 108) have already been consulted on in their respective Land Use plans using agency approved protocols. However, the changes in the Amendment would direct managers to use updated sage-grouse

information which would benefit the sage-grouse. For example, managers can better control insect outbreaks in PHMAs if the PHMAs are identified.

Vegetation management actions may occur in gray wolf occupied habitat. Wolves are highly adaptable and utilize a variety of habitats. Vegetation management actions such as season of use restrictions (Action 6), monitoring efforts (Action 9), and working collaboratively with various agencies (Action 22) are not expected to directly or indirectly impact occupied gray wolf habitat. Although unlikely, actions that minimize the potential for the spread of noxious and invasive weeds (Action 9), deferment of livestock (Action 97), and the improvement of vegetative composition (Action 93, 95, 100, 107) may inadvertently benefit gray wolves through improved habitat conditions.

Wild Horses

Wild horse management action include incorporating rangeland improvements for wild horses in Greater Sage-Grouse PHMAs (Action 109), consideration of sage-grouse PHMAs when evaluating AML's (Action 110), considering sage-grouse PHMAs when conducting land health assessments (Action 111), addressing direct and indirect effects to sage-grouse populations and habitats when conducting NEPA analysis for wild horse and burro management activities (Action 112), and to coordinate with all other resources to conduct land health assessments within all BLM HMAs (Action 113).

Gray wolves may occur within herd management areas in the planning area. Wild horse management actions include measures which are meant to protect and preserve sage-grouse habitat. As a result, changes to existing wild horse management are not likely to affect gray wolves.

Wildland Fire

Wildland fire management actions described in the Amendment include, fire and fuels management which contributes to the protection and enhancement of sagebrush habitat that supports sage-grouse populations (Action 26), complete and continue to update Greater Sage-Grouse Landscape Wildfire & Invasive necessary to maintain sagebrush habitat to support interconnecting sage-grouse populations which includes identification of annual treatment needs for wildfire and invasive species management as identified in local unit level Landscape Wildfire and Invasive Species Assessments (Action 27), implementation of coordinated inter-agency approach to fire restrictions for sage-grouse (Action 28), utilization of fire management strategies and tactics to achieve sage-grouse resource objectives (Action 29), fuel treatments would be implemented with an emphasis of protecting and enhancing PHMAs (Action 114), restoring burned areas within PHMAs (Action 115), post fuels management projects would be designed to ensure long-term persistence of seeded or pre-treatment native plants to return to suitable sage-grouse habitat (Action 117), avoiding treatments in areas containing old trees or persistent woodlands (Action 118), and management actions to benefit sage-grouse during fire suppression activities (Action 124).

Wildland fire management actions may occur in gray wolf occupied habitat. Gray wolves are highly adaptable and utilize a variety of habitats. Although unlikely, because the gray wolf may occur in the same geographical area as sage-grouse, some wildland fire management actions such as habitat restorations and post fuel treatments may inadvertently affect the species by altering prey distribution and associated escape cover, but would not jeopardize them.

Wildlife and Fisheries

Wildlife and fisheries management actions described in the Amendment include protocols for sage-grouse monitoring(Actions 1, 3, 125), development of landscape level restoration, conservation and maintenance strategies (Actions 8, 14, 15, 21) application of required design features (Action 10), addition of new sage-grouse habitat (Action 13), limitation of oil and gas development densities (Action 126), limitation of all

surface disturbances to 5% per 640 acres (Action 127), mitigation protocol (Actions 5, 7, 128), prohibition of surface disturbing activities within 0.6 mile radius of occupied sage-grouse leks within PHMAs (Action 129), prohibition of surface disturbing activities within 0.25 mile radius of occupied sage-grouse leks outside PHMAs (Action 130), timing restrictions in breeding, nesting, and brooding PHMA (Actions 17,131, 132, 133, 134), promote control of predators to sage-grouse or sage-grouse habitat (Action 135), and implementation of noise restrictions (Action 136).

Wildlife and fisheries management actions may occur in gray wolf occupied habitat. Gray wolves are highly adaptable and utilize a variety of habitats. Although greater sage-grouse may reside in the same habitat required by gray wolves, management actions intended to protect sage-grouse would not affect gray wolves. Although unlikely, because the species may occur in the same geographical area, some management actions may inadvertently benefit the species. Beneficial actions may include restrictions on oil and mineral developments, restrictions of surface disturbing activities, and increased mitigation protocol. No negative effects from wildlife and fisheries activities are anticipated.

Cumulative Effects

Cumulative impacts according to the ESA, Section 7 Consultation Handbook definition (USFWS 1998a) include the incremental impacts of future State, or private activities (i.e., excluding federal activities), that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Existing and proposed activities on non-federal lands in the planning area that have the potential to cumulatively affect the species include but are not limited to the following:

- Non-Federal oil and gas and related energy development
- Livestock grazing on private lands
- Timber harvesting on private lands
- Subdivision development
- Recreation
- Coal mine operations
- Transmission lines
- Seismic exploration
- Bentonite and gypsum mining

Implementation of the Amendment would not change any potential effects to the gray wolf that may result from current or projected future non-Federal actions.

7.15.2 Effects Determination

The effects determination only addresses changes in management that would occur from the Amendment. Existing management conditions that would not be changed as a result of the Amendment have already been consulted on using agency approved methods and will not be analyzed in this document.

Management actions included in the Amendment are largely supportive in nature, and are meant to guide or advise other program actions and activities in a manner conducive to maintaining and/or promoting population growth and habitat for the sage-grouse. Management actions included in the Amendment which are specific to sage-grouse such as increased monitoring, data collection, greater coordination and review, and timing restrictions, would have no effect on the gray wolf because no surface disturbing actions would occur. Activities included in the Amendment are not anticipated to affect the species. Activities conducted under the Amendment are designed to improve and benefit sage-grouse habitat and populations. Because no negative affects gray wolf would occur and any actions which may directly benefit the species are unlikely,

implementation of the Amendment would cause "**No Jeopardy**" to the gray wolf, within the Pinedale, Kemmerer, Rawlins, Rock Springs and Bridger Teton field office areas.

Table 18-Summary and Determination of Effects for the Gray Wolf

Program	Bridger Teton	Pinedale	Kemmerer	Rock Springs	Rawlins	Medicine Bow	Casper	Thunder Basin	Newcastle
Lands and Realty	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Livestock	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Mineral Resources	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Recreation	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Special Designations	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Special Status Species	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Transportation and Access	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Vegetation	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Watershed and Water Quality	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Wild Horses	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Wildland Fire	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE
Wildlife and Fisheries	NJ	NJ	NJ	NJ	NJ	NE	NE	NE	NE

NLAA= May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No Jeopardy

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Concurrence Letter from the U.S. Fish and Wildlife Service

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

JUN 17 2015

In Reply Refer To:
06E13000-2010-I-0327

To: Acting State Director, Bureau of Land Management, Wyoming State Office, Cheyenne, Wyoming

From: Field Supervisor, U.S. Fish and Wildlife Service, Wyoming Field Office, Cheyenne, Wyoming

Subject: Section 7 Consultation for the Wyoming Greater Sage-grouse 9-Plan Land Use Plan Amendment and Final Impact Statement (9-Plan Amendment)

This correspondence transmits the U.S. Fish and Wildlife Service (Service) programmatic memorandum of concurrence in response to the U.S. Bureau of Land Management (BLM) and U.S. Forest Service (USFS) request for consultation for the impacts from the Wyoming Greater Sage-grouse Land Use Plan Amendment and Final Impact Statement (9-Plan Amendment) (BLM and USFS 2015b) (Proposed Action) to federally listed species in Wyoming in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Your March 27, 2015, request for informal programmatic consultation was received in our office on April 9, 2015. Your memo requested our concurrence with numerous "not likely to adversely affect" determinations; concurrence with "no jeopardy" determinations for non-essential, experimental populations; and concurrence with a "no destruction or adverse modification" determination for proposed critical habitat.

This correspondence addresses potential effects to the black-footed ferret (*Mustela nigripes*), blowout penstemon (*Penstemon haydenii*), Canada lynx (*Lynx canadensis*) and its designated critical habitat, Colorado butterfly plant (*Gaura neomexicana* var. *coloradensis*) and its designated critical habitat, desert yellowhead (*Yermo xanthocephalus*) and its designated critical habitat, gray wolf (*Canis lupus*), grizzly bear (*Ursus arctos horribilis*), Kendall warm springs dace (*Rhinichthys osculus thermalis*), northern long-eared bat (*Myotis septentrionalis*), Preble's meadow jumping mouse (*Zapus hudsonius preblei*), Ute ladies'-tresses orchid (*Spiranthes diluvialis*), western yellow-billed cuckoo (*Coccyzus americanus*), Wyoming toad (*Bufo* [*Anaxyrus*] *baxteri*) and Colorado River and Platte River downstream listed species and their designated critical habitats from all new actions associated with the 9-Plan Amendment as described in Appendix 1 of the Biological Assessment (BA) (BLM and USFS 2015a).

The 9-Plan Amendment covers the planning areas for the Wyoming BLM Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices and the USFS Bridger-Teton National Forest, Medicine Bow National Forest, and the Thunder Basin National Grasslands Planning Units, including all public land and Federal mineral estate managed by the BLM and the USFS within these areas. These planning areas encompass approximately 16 million acres of public surface land administered by the BLM and USFS and approximately 23 million acres of Federal mineral estate in Albany, Campbell, Carbon, Converse, Crook, Fremont, Goshen, Laramie, Lincoln, Natrona, Niobrara, Platte, Sublette, Sweetwater, Teton, Uinta, and Weston Counties in Wyoming. Of the 23 million acres of Federal mineral estate, approximately 7 million acres are split-estate.

Land Use Plans (LUPs) are used by the BLM and the USFS to guide and control future actions and set standards upon which future decisions on site-specific activities are based. A LUP only establishes general management policy and is not used to make decisions that commit resources. A LUP identifies desired outcomes, also known as "desired future conditions." These outcomes are expressed in LUPs as goals, standards, objectives, and allowable uses and actions needed to achieve desired outcomes, often referred to as LUP decisions or resource allocations. The 9-Plan Amendment modifies some of these decisions and resource allocations of the BLM and USFS in their LUPs in Wyoming; therefore, it is only on the modifications of these decisions or resource allocations upon which our evaluations of the effects determinations are based. Furthermore, the BLM and USFS are still obligated to conduct section 7 consultation at the project-specific level for all BLM- or USFS-authorized activities that "may affect" a listed species.

In the 9-Plan Amendment BA, the BLM and USFS made "not likely to adversely affect (NLAA)" determinations, "no jeopardy" determinations, and a "no destruction or adverse modification" determination for the effect of some modifications of management actions on listed species and critical habitats in the LUP areas of Wyoming. These are displayed in Table 1 by species and LUP. For specific details concerning the effects determinations for each program within each LUP area, please see the 9-Plan Amendment BA (BLM and USFS 2015b). Furthermore, the BLM and USFS also determined that many of the management actions within the BA would have "no effect (NE)" to listed species. These determinations are summarized, by planning area, in Table 1. Summarization involved identifying and presenting the highest level category of potential effects for each species for each planning area. For specific detailed effects determinations made by the BLM or FS for each program, within each planning area, see the BA (BLM and USFS 2015a). The ESA does not require the Service to concur with "no effect" determinations; however, we appreciate receiving the information used to support your conclusions.

Table 1. Listed species "no effect (NE)", "not likely to adversely affect (NLAA)", "no jeopardy (NJ)", and "no destruction or adverse modification (ND/AM)" determinations summarized by planning area. For specific detailed effects determinations for each program, within each planning area, see the BA (BLM and USFS 2015b). These determinations only apply to the modifications in management resulting from the 9-Plan Amendment.

Species / Land Use Plan	Black-footed Ferret	Blowout Penstemon	Canada Lynx and Critical Habitat	Colorado Butterfly Plant and Critical Habitat	Colorado River Fishes and Critical Habitat	Desert Yellowhead and Critical Habitat	Gray Wolf	Grizzly Bear	Kendall Warm Springs Dace	Northern Long-eared Bat	Platte River Species and Critical Habitat	Preble's Meadow Jumping Mouse	Ute ladies'-tresses	Wyoming Toad	Yellow-billed Cuckoo	Yellow-billed Cuckoo Proposed Critical Habitat
Bridger-Teton	NE	NE	NE	NE	NE	NE	NJ	NLAA	NE	NE	NE	NE	NLAA	NE	NLAA	-
Casper	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NLAA	NE	NE	-
Kemmerer	NE	NE	NE	NE	NE	NE	NJ	NLAA	NE	NE	NE	NE	NLAA	NE	NLAA	-
Medicine Bow	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NLAA	NE	NE	NE	-
Newcastle	NE	NE	NE	NE	NE	NE	NE	NE	NE	NLAA	NE	NE	NLAA	NE	NE	-
Pinedale	NE	NE	NE	NE	NE	NE	NJ	NLAA	NE	NE	NE	NE	NLAA	NE	NLAA	-
Rawlins	NJ	NLAA	NE	NE	NE	NE	NJ	NE	NE	NE	NE	NLAA	NLAA	NE	NE	-
Rock Springs	NE	NE	NE	NE	NE	NE	NJ	NLAA	NE	NE	NE	NE	NLAA	NE	NLAA	ND/AM
Thunder Basin	NE	NE	NE	NE	NE	NE	NE	NE	NE	NLAA	NE	NE	NLAA	NE	NE	-

NLAA = May affect, not likely to adversely affect
LAA = May affect, likely to adversely affect
NE = No effect
NJ = No jeopardy
ND/AM = No Destruction or Adverse Modification
- = Designated Critical Habitat not present in planning area

Gray Wolf and Black-footed Ferret. The Service concurs with your determination that activities described in the BLM and USFS's 9-Plan Amendment will not jeopardize the continued existence of the gray wolf in Wyoming or the black-footed ferret in the Shirley Basin area of Wyoming. This determination is based on the fact that the gray wolves and black-footed ferrets located in these areas are designated as non-essential, experimental populations. By definition, any effects to non-essential, experimental populations of any species will not jeopardize the continued existence of the species. Furthermore, the change in management actions in the LUPs as a result of the 9-Plan Amendment are expected to increase protection for the greater sage-grouse (*Centrocercus urophasianus*). This increased protection and reduction in disturbance to sagebrush ecosystems could result in increased protection for gray wolves or black-footed ferrets resulting in situations where the actions could result in beneficial effects to these species.

Blowout Penstemon, Grizzly Bear, Northern Long-eared Bat, Preble's Meadow Jumping Mouse, Ute ladies'-tresses, and Western population of the Yellow-billed Cuckoo. The BA evaluated effects of the Proposed Action to the blowout penstemon, grizzly bear, northern long-eared bat, Preble's meadow jumping mouse, Ute ladies'-tresses, and the western distinct population segment (DPS) of the yellow-billed cuckoo and determined that the effects were "not likely to adversely affect" these species. The Service concurs with your determinations that activities described in the Proposed Action will not likely adversely affect these species. The effects of the 9-Plan Amendment are expected to be insignificant, discountable, or wholly beneficial to these species. The change in management actions in the LUPs as a result of the 9-Plan Amendment are expected to increase protection for the greater sage-grouse. This increased protection and reduction in disturbance to sagebrush ecosystems could result in increased protection for the above-listed species resulting in situations where the actions could result in beneficial effects to these species.

Proposed Critical Habitat for the Western DPS of the Yellow-billed Cuckoo. Pursuant to the requirements of 7(a)(4) of the ESA and CFR 402.10, the BLM assessed the effects of their Proposed Action and made a no destruction or adverse modification determination for the Proposed Action. Though Director (Service) concurrence is not required by 7(a)(4) or CFR 402.10, the inclusion of the determination in your BA creates a need under CFR 402.12(k) for the Service's concurrence with your determination. After reviewing your BA, we concur with your determination that the Proposed Action will not cause adverse modification or destruction of proposed critical habitat for the western DPS of the yellow-billed cuckoo; pursuant to language at CFR 402.12(k), a conference is not required.

This concludes consultation and provides our concurrence with your determinations for proposed critical habitat and non-essential, experimental populations pursuant to the regulations implementing the ESA. BLM and USFS activities related to the 9-Plan Amendment in Wyoming should be re-analyzed if new information reveals effects of the activities that may affect listed or proposed species or designated or proposed critical habitat in a manner or to an extent not considered in this consultation; if the activities are subsequently modified in a manner that causes an effect to a listed or proposed species or designated or proposed critical habitat that was not considered in this consultation; and/or, if a new species is listed or critical habitat is designated that may be affected by these activities.

Thank you for your assistance in the conservation of endangered, threatened, and candidate species. In future communications concerning this memorandum please refer to consultation number 06E13000-2010-I-0327. If we may be of further assistance, please contact Alex Schubert of my staff at (307) 772-2374, extension 238.

cc: BLM, Endangered Species Coordinator, State Office, Cheyenne, WY (C. Keefe) (ckeefe@wyo.gov)
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Appendix L – Greater Sage-Grouse Wildfire and Invasive Species Habitat Assessment

The process that is identified here is a suggestion for a consistent approach in conducting an assessment of the Greater Sage-Grouse habitat and wildfire threat at the local planning unit level. Variations to this approach may be made based on interdisciplinary team input and other priorities identified in this plan.

This collaborative analysis is intended to ensure that actions will be beneficial for long-term enhancement and protection of Greater Sage-Grouse habitat.

This four step process will influence the determination of appropriateness and resulting character of projects to protect, maintain, and enhance Greater Sage-Grouse habitat. This process will also identify "priority," or "focus," areas which spatially define priorities within the planning area for purposes of wildland fire and invasive species. Subsequent program planning and resource management planning should be developed with and incorporate the results of this analysis in coordination with other priorities identified in this plan. Initiation and/or completion of project level National Environmental Policy Act of 1969 (NEPA) for actions stemming from this assessment will increase certainty of implementation and effectiveness.

This same type of process should be developed at the regional level by the U.S. Department of the Interior, Bureau of Land Management (BLM) that would focus on a prioritized process to: 1) ensure completion and assessment updates of the local unit level Wildland Fire and Invasive Species Assessments prior to December 2014; and 2) outline a process in which funding is prioritized and allocated by need.

Step 1: Characterization of Greater Sage-Grouse Habitat

Relationship to the Larger Scale Setting

- How does the planning unit lie within the context of the Greater Sage-Grouse habitat?

Location

- Describe the relationship of Greater Sage-Grouse habitat with the planning unit.

Analysis Area Setting and Spatial Boundary

- Brief description of Greater Sage-Grouse habitat, specifically in terms of acreage and the selection of the analysis area.

- Analysis area should be large enough to provide buffers around Greater Sage-Grouse habitat to effectively address fire hazard, risk to the habitat, and restoration opportunities.

Step 2: Issues and Key Questions

Fire and Fuels Issue

- In coordination with the U.S. Fish and Wildlife Service (USFWS), identify where fire is a major threat to Greater Sage-Grouse habitat and where fire may help enhance the habitat in the local planning area. In a brief paragraph, summarize the issues related to wildland fire.

Key Questions

Fire Management

1. Where are the priority fire management areas (spatially defined polygons) having the highest need for preparedness and suppression action?
2. Where is the greatest wildfire risk, considering trends in fire occurrence, fuel conditions, and highly valued Greater Sage-Grouse habitat?
3. Where will fire suppression resources be most successful to mitigate the risk and protect Greater Sage-Grouse habitats?
4. Where do opportunities exist that could enhance or improve suppression capability in important Greater Sage-Grouse habitats?
   a. For example, increased water availability through installation of heli wells or stock tanks.
   b. Decreased response time through pre-positioned resources or remote stations.
5. Where should wildfire be managed to achieve ARMPA objectives for improving or restoring Greater Sage-Grouse habitat (old decadent sagebrush/juniper encroachment)?
6. How can fire management be coordinated across jurisdictional boundaries to reduce risk or to improve Greater Sage-Grouse habitat?

Fuels Management

1. Where are the priority fuel management areas (spatially defined treatment opportunity areas which consider fire risk, fuels conditions, and highly valued Greater Sage-Grouse habitat)?
2. Based on fire risk to important Greater Sage-Grouse habitats, what types of fuels treatments should be implemented that will reduce the risk? Where should fuels treatments be prioritized, and what is the amount of treatment acres needed for long-term enhancement and protection of Greater Sage-Grouse habitat?
3. Based on opportunities for fire to improve/restore Greater Sage-Grouse habitats, what types of fuels treatments should be implemented that will increase ability to allow fire? Where should fuels treatments be prioritized, and what amount of treatment is needed for long-term enhancement and protection of Greater Sage-Grouse habitat?
4. Are there opportunities to utilize a coordinated approach across jurisdictional boundaries?
   a. Fuel reduction techniques include, but are not limited to: grazing, prescribed fire, chemical, biological and mechanical treatments.
5. Are there areas where fuel treatments help restore Greater Sage-Grouse habitat as well as reduce risk?

Restoration

1. Are there opportunities for restoration treatments to conserve, enhance or maintain Greater Sage-Grouse habitat?
2. Where will post-fire restoration be most successful?

Step 3: Current Conditions

The purpose of this step is to develop information relevant to the issues and key questions identified in Step 2.

Biological Features

Fire and Fuels

- Has fire played a role in shaping the vegetation?
- Description should include dominant cover types, plant associations, and seral stages to identify the condition of Greater Sage-Grouse habitat.
- What has been the impact of fire exclusion (increased conifer encroachment)?
- What is the current extent of annual grasses, their effect on fire frequency/severity/size, and implications for fire suppression?
- What are the trends related to plant succession and fire regimes?

Fuels Management

- Describe current fuels management within the planning area.

Fire Management

- Describe fire occurrence trends.
- Describe suppression capabilities.

Restoration

- Describe the spatial depiction of invasive species occurrence.

Methodology

- What are the analysis methods to be utilized and analysis assumptions?

Use of Best Available Science

- Describe data sets used, such as the Large Fire Simulator (FSIM) layer, local data, etc.
- What are the elements of science used?

Step 4: Interpretation and Recommendations

In this section, consider the analysis in Section 3. Interpret, refine and recommend temporal, spatial, and quantifiable outcomes that are prioritized based on need (This can also be correlated to the Vegetation Dynamics Development Tool [VDDT] modeling as a comparison and refine the results.). Include broad statements related to each question, including how you got to the results.

- There is a need for XXXX amount of restoration treatments.
- There is a need for XXXX amount of fuel treatments.
- There is a need to prioritize XXXX Greater Sage-Grouse habitats for aggressive initial attack that were identified at highest risk from losing key habitat components.

- To enhance initial attack capabilities, there is a need to install XXXX or staff XXXX remote station during XXXX timeframe or XXXX conditions.

Fire Management

1. Identify priority areas for fire suppression resources to protect Greater Sage-Grouse habitats that are at greatest risk.

   Include spatially defined priority areas, tables, maps, or appropriate information.

2. Identify opportunities to enhance or improve suppression capability.

   Include tables, maps, or appropriate information.

3. Identify areas where wildfires can be managed to achieve ARMPA objectives.

   Include tables, maps, or appropriate information.

Fuels Management

1. Identify, based on fire risk, fuel conditions and burn probability, fuels treatment priority areas and the level of treatment (acres) needed for long-term enhancement and protection of Greater Sage-Grouse habitat.
    - Include spatially defined priority areas, tables, maps, or appropriate information.
    - Proposed fuels treatments should be delineated by type, such as:
        i. Linear fuel breaks along roads
        ii. Other linear fuel breaks to create anchor points
        iii. Prescribed burning
        iv. Mechanical conifer removal
        v. Other mechanical, biological or chemical treatment
2. Identify where fuel treatments would increase the ability to use fire to improve/enhance Greater Sage-Grouse habitat?
    - Include tables, maps, or appropriate information.
3. Identify coordination between XXXX and XXXX to facilitate the planning and implementation for fuels treatments.
    - Include tables, maps, or appropriate information.

Restoration

1. Identify restoration treatments needed to conserve, enhance or maintain Greater Sage-Grouse habitat.

   Include tables, maps, or appropriate information.

2. Identify locations where post-fire restoration treatments should be focused.

   Include tables, maps, or appropriate information.

Annual Treatment Needs

1. Based on the information above and within the planning area, what are the annual needs based on the key questions and summary statements?

Annual Treatment Abilities

1. Putting Greater Sage-Grouse habitat protection and enhancement into perspective with other high valued resources and important land management goals, how does the annual need relate to capabilities?
2. What are the realistic annual expectations in fire management, fuels management, and restoration for the next five years?

Appendix M – Reclamation Plan

Introduction

Reclamation of public land is required for any surface disturbing activity. A reclamation plan tailored to a specific surface disturbing activity will be required for Federal actions authorized, conducted, or funded by the U.S. Department of the Interior, Bureau of Land Management (BLM) that disturb vegetation and/or the mineral/soil resources. This appendix details the elements that need to be considered during project planning, project implementation, and post-disturbance steps required to assure timely and proper recovery of the site. The reclamation processes included in this appendix are specific to reclamation activities in sage-grouse core habitat areas proposed in this Record of Decision (ROD). For reclamation requirements outside of core habitat areas, please refer to the Reclamation Plan in the appropriate BLM resource management plan (RMP).

This plan provides a framework for project-specific and site-specific reclamation actions that guide land management toward a future condition for any surface disturbance in sage-grouse core habitat areas. Early coordination between the BLM and project proponents is necessary to produce a comprehensive, site specific plan. The site-specific reclamation plan will serve as a binding agreement between project proponents and the land management agencies for the expected reclamation condition of the disturbed lands and may be periodically reviewed and modified as necessary. The reclamation plan will include sufficient monitoring requirements, reports, and components to ensure sufficiency.

Although the proponent will typically develop the reclamation plan, appropriate BLM involvement in preplanning, data inventory, and approval is essential to develop the optimum reclamation proposal. Most determinations regarding what is expected should be made before the reclamation plan is approved and implemented. However, the BLM Authorizing Officer can modify a plan through adaptive management, to adjust to changing conditions or to correct for an oversight using the best available science; changes should be agreed upon by the project proponent. An approved reclamation plan and reporting obligations will be required prior to any surface disturbing activity.

A reclamation plan has several purposes. For sage-grouse core habitat areas, the following will be used to guide the process:

- Reclamation plans provide detailed guidelines for the reclamation process and fulfill federal, state, county, and other local agencies requirements. They can be used by regulatory agencies in their oversight roles to ensure that the reclamation measures are implemented, are appropriate for the site, and are environmentally sound.

- Reclamation plans will be developed on a project specific basis; implementation of reclamation plans will be used by the project proponent throughout the permitting process, interim reclamation, cessation of surface disturbing activities (final reclamation), and finally at bond release (for energy development projects). In turn, the BLM will use the reclamation plan as a basis to review and evaluate the success of the reclamation program.

- Reclamation plans should provide objectives and approved procedures to facilitate monitoring and compliance evaluations.

Ecological Site Description

To understand the variations across the landscape, Natural Resource Conservation Service (NRCS) has classified these different parts into units called ecological sites. Ecological site is defined as “a distinctive

kind of land with specific characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation." Any land inventory, analysis, and resulting management decisions require the knowledge of these individual sites and their interrelationships to one another on the landscape.

The ESD application provides the capability to produce automated ESD from the data stored in its database. An ESD is the official repository for all data associated with the development of forestland and rangeland ESD by the NRCS.

The data comprising an ESD is presented in four major categories:

- Site Characteristics – Identifies the site and describes the physiographic, climate, soil, and water features associated with the site.

- Plant Communities – Describes the ecological dynamics and the common plant communities comprising the various vegetation states of the site. The disturbances that cause a shift from one state to another are also described.

- Site Interpretations – Interpretive information pertinent to the use and management of the site and its related resources.

- Supporting Information – Provides information on sources of information and data utilized in developing the site description and the relationship of the site to other ecological sites.

This information and the ESDs the NRCS have developed to date may be found at the following website: http://esis.sc.egov.usda.gov/Welcome/pgECOLOGICALSITEDESCRIPTIONWelcome.aspx

Reclamation Goals to Restore Sage-grouse Habitat Areas

Goals:

- Short term goal: immediately stabilize disturbed areas and provide conditions necessary to achieve the long term goal.

- Long term goal: facilitate eventual ecosystem reconstruction to maintain a safe and stable landscape and meet the desired outcomes of the land use plan.

- Reclaim vegetative communities within disturbed areas that will mirror those of healthy communities as described in the ESD.

Reclamation Objectives in Sage-grouse Core Habitat Areas

Objectives:

- Restore vegetative cover and landforms sufficient to maintain healthy, biologically active topsoil; control erosion; and, minimize habitat loss during the life of the well, facilities, or other surface disturbing activities.

In addition:

- Provide conditions and use methods to allow for successful reclamation in the least amount of time relative to site condition.

- Accelerate the restoration of sage-grouse habitat components that may be outside of the project area to provide for sage-grouse population persistence in the area of disturbance.

- Return the land to the desired condition based on ESDs. This includes restoration of the landform and natural vegetative community, hydrologic systems, visual resources, and wildlife habitats. To ensure that the long-term objective will be reached through human and natural processes, actions will be taken to ensure standards are met for site stability, visual quality, hydrological function, vegetative productivity, and habitat function.

Pre-Disturbance Baseline Inventory

Pre-disturbance inventory is a critical part of reclamation planning and provides information on ecological structure and function. This should include inventory of wildlife habitat, species composition, watershed protection, and visual qualities; as well as, characteristics that underlie those values and functions – the plants, soil, and landscape features that may require restoration. The inventory establishes a framework for successful reclamation, monitoring, and evaluation (Norton et al. 2010).

The inventory includes two steps necessary to compile complete and accurate information:

1. Gathering existing site-specific information from reliable sources; and,
2. Evaluating on-site ecosystem function and characteristics that may require subsequent restoration (Norton et al. 2010).

Table M-1. Description of Baseline Inventory

Activity	Critical Components
Initiating baseline inventory	• Identify site location • Contact land manager/owner or agency • Consult soil survey maps • Determine ESD • Consult Wyoming Geographic Information Center (WyGISC) to access aerial photography in color, grayscale, or color infrared (CIR) • Identify wildlife presence or use • If state lands, contact Wyoming Department of Environmental Quality, Land Quality Division for guidelines and or permits.
Conducting baseline inventory	• Travel to site • Verify ESD and soil types • Record vegetation types and distribution on the site using an accepted method for collecting the data • Record topographical landforms and surface hydrological features • Take photographs to provide a visual reference • Document data gathering and photos with GPS coordinates.

– Norton et al. 2010

Reclamation Plan Requirements/Minimum Standards

Reclamation plans should incorporate the standards set forth in Wyoming BLM Reclamation Policy as described in IM WY-2012-032. In the future, this will be supported with more detailed guidance such as new reclamation bond standards, a statewide monitoring and reporting strategy, and sample templates for

both reclamation and non-native and invasive species management plans. Specific reclamation information and other technical guidance will be forthcoming and posted on the Wyoming Reclamation web site (http://www.blm.gov/wy.st/en/programs/reclamation.html).

Reclamation Best Management Practices for Sage-grouse Habitat

Habitat reclamation will be initiated, and subsequently supplemented as necessary, to meet reclamation standards within all areas of sage-grouse habitats affected by soil disturbing activities.

Vegetation Management

Avoid disturbance in areas providing the best attributes for sage-grouse nesting, brood rearing, and wintering habitat (i.e., dense stands of sagebrush) when siting the location of a proposed action.

Reduce vegetation damage during reclamation in adjacent areas of sage habitats.

Choose native seed mixes that will provide a height to cover ratio to provide the maximum nesting cover. Where native seed mixes of local genotype are not available, consider the use of appropriate cultivars of native species.

Plan time of year for seed planting based on the optimal growing conditions for that species, site specific conditions, and the environmental conditions of that growing season.

Reference the Upper Green River and Sage-grouse Working Group Beneficial Seed Matrix for Sage-grouse, Mule Deer and Antelope:

http://gf.state.wy.us/wildlife/wildlife_management/sagegrouse/UpperGreenRiver/Index.asp
http://gf.state.wy.us/wildlife/wildlife_management/sagegrouse/Northeast/index.asp

Species used solely for site stabilization should be sterile, or a species unlikely to persist as natives are established.

The land management agencies do not recommend using a cover crop in areas with precipitation less than ten inches, as some cover crop species are not recommended for use in areas below 12 inch precipitation; local land management agencies, the NRCS, or other experts should be consulted for site-specific recommendations on cover crop species.

Additional Monitoring Components

Project proponent should start post-disturbance collection of cover and composition data in the first growing season after disturbance. Data must be collected using repeatable methods approved by the appropriate land management agency and will be the same methods that were used to describe vegetation for baseline (or reference area). The same methods will be used each time the vegetation is monitored.

Pre-Development Habitat Management

Use native site seed collection and local seed sources to the maximum extent practicable to maintain genetic diversity of local plant populations. Consider the use of cultivars of native species in the absence of sources of native seeds.

Exceptions

To facilitate reclamation seeding during the optimal growing seasons, exceptions may be approved providing that the exception granted would minimize surface disturbance outside of the action area.

Proponent Agreements

The land management agencies will encourage cooperative agreements between the agencies, proponent project proponents, and interested proponents so as to ensure the success of habitat reclamation.

Criteria for Determining Reclamation Success

The end result of reclamation success is the return of functional wildlife habitat (particularly to meet the sage-grouse each of the life stage requirements) within the disturbance area, as well as limiting the density of disturbance within the project impact analysis area (PIAA). By meeting the reclamation criteria below, a disturbance area would no longer count toward five percent loss of sage-grouse habitat in the density of disturbance calculations conducted by the BLM and Wyoming Game and Fish Department (WGFD).

A. The recently released Rangeland Ecological Site Interagency Manual (WO IB 2011-004) has the following objectives that address the use of ESD which include State and Transition Models:

- To implement a standardized system to define and describe a common unit for inventory, monitoring, evaluation, and management of rangeland ecosystems.

- To provide direction for the cooperative development and application of rangeland ESD.

B. The Rangeland Ecological Site Interagency Handbook (mentioned above) goes into detail on use of State and Transition Models and ESD, and can be used as a reference when developing reclamation plans using these methods.

C. The current BLM Handbook H-4180-1 contains references to ecological sites, ESD, and reference areas. The site potential is related to transitions and thresholds in the handbook. The handbook also recognizes the Ecological Site Index and ESD may not be available for all assessment areas, but that where they exist, they should be used. Other vegetation succession models are not mentioned in H-4180-1.

D. The National Range Handbook (H-4410-1) addresses State and Transition Models and ESD and can be used as a reference.

E. The NCRS Ecological Site Inventory Technical Reference (TR 1734-07) also discusses about succession and State and Transition Model pathways, and ESD.

F. The NRCS Riparian-Wetland Ecological Site Inventory Technical Reference (TR-1737-7) does the same.

If ESDs, which include State and Transition Models, are not written for the project site, the project proponent should work with the land management agencies, WGFD, NRCS, and other local experts to create these products.

Sage-grouse Habitat Requirements

Vegetative Criteria

Native Forbs: The average frequency of desirable forbs must be a minimum of 75 percent of the ESD reference site. Reference sites must be selected in areas of the same ESD and must be mutually agreed upon

with the land management agency and WGFD. If this is not possible, the desired plant community for the site may be used. Diversity of forbs on a reclaimed site must be equal to or greater than pre-disturbance composition. Timeframes to determine whether replanting or developing another strategy to meet native forb establishment will be determined upon establishing the ESD.

Native Shrubs: The average frequency of the shrub component must be at least 50 percent of the ESD reference site. This includes both shrubs and sub-shrubs (e.g., winterfat (*Krascheninnikovia lanata*), fringed sage (*Artemisia frigida*), etc.). At least 15 percent density or frequency of the shrub component must be by the dominant species relative to pre-disturbance composition. The diversity of shrubs must be equal to or greater than the desired plant community. Timeframes to determine whether replanting or developing another strategy to meet native shrub establishment will be determined upon establishing the ESD.

Native Grasses: Reclaimed sites must have growth forms and plant diversity representative of the ESD reference site. These are to be planted at rates appropriate to achieve abundance and diversity characteristic of those found in the ESD reference site. Timeframes to determine whether replanting or developing another strategy to meet native grass establishment will be determined upon establishing the ESD.

Non-Native and Invasive Species: Reclaimed sites must be free from all species listed on the Wyoming Noxious Weed List. All local, state, and federal invasive[8] plant laws and regulations must be adhered to. Other highly competitive invasive plants, such as downy brome grass, will be controlled. Site specific weed management plans will address management goals and priorities.

Plant Vigor: Plants must be resilient as evidenced by well-developed root systems, flowers, and seed heads. All sites to be considered reclaimed must exhibit the sustainability of the above desired attributes. A minimum of one growing season without external influences (irrigation, mat pads, fences, etc.) may satisfy this requirement.

Final Reclamation Criteria

Ground Cover and Ecological Function

To ensure soil stability and nutrient cycling, canopy must be equal to or greater than the pre-disturbance composition and vegetative litter must be decomposing into the soil.

Vegetative Criteria

Native Forbs: The average percent composition and total diversity of forbs must be equal to or greater than pre-disturbance composition. Timeframes to determine whether replanting or developing another strategy to meet native forb establishment will be determined upon establishing the ESD.

Native Shrubs: The average frequency of the shrub component must be at least 80 percent of pre-disturbance composition within eight years. This includes both shrubs and half shrubs (e.g. winterfat, fringed sage, etc.). At least 25 percent density or frequency of the shrub component must be the dominant species from the reference site. The diversity of shrubs must be equal to or greater than the reference site.

Native Grasses: Reclaimed sites must exhibit grass percent composition equal to the reference site. Timeframes to determine whether replanting or developing another strategy to meet native grass establishment will be determined upon establishing the ESD.

[8] Invasive species. A species that is not native (or is alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112).

Non-Native/Noxious/Invasive Weeds: Sites must be free from all species listed on the Wyoming and Federal noxious weed list. All state and federal laws regarding non-native species and noxious weeds must be followed. Aggressive action to eliminate highly competitive invasive species such as cheatgrass and other invasive brome grasses must be taken to prevent spread.

Plant Vigor: Plants must be resilient as evidenced by well-developed root systems and flowers. Shrubs will be well established and will exhibit age class structure.

An Alternative Determination for Reclamation Success

Standards for success will be developed based on performance based criteria and the ESD. Locations where the site provides sage-grouse habitat during all life stages; will have criteria developed based on habitat requirements for sage-grouse. Criteria may be developed based on the nesting, early and late brood-rearing, and winter concentration habitats. If the site has insufficient soil attributes or other components to provide sage-grouse habitat based and the ESD confirms that you will never have attributes that provide for sage-grouse habitat, the reclamation can be deemed a success as long as it meets the ESD. The objectives for each reclamation plan are set with site specific criteria at the field office level, thereby maximizing the unique conditions within each field office.

Monitoring

1. Standard Monitoring Requirements:

a. Project proponents must use the same locations and methods used at baseline for repeat photography. Additional locations may be selected to document progress of reclaimed area to demonstrate interim[9] and final reclamation[10] success, and to monitor any identified problems such as erosional features. The site should be photographed once every year normally at the same time period, from the same locations and direction so that photographs are repeated through time. Photographs should be taken during the growing season.

b. Weed inventory: Disturbed and reclaimed areas will be evaluated for noxious and invasive weeds annually until the timeline determined by the ESD has been satisfied. A weed control plan will be written separately under the BLM's Integrated Weed Management Program.

c. Erosion control/soil stability: The reclaimed area should be evaluated for any signs of erosion problems annually (until the timeline determined by the ESD has been satisfied) and when the site is subject to erosional events. Identified erosion features should be monitored using repeat photography. Absence of erosion features is a positive indication that the soil is stabilizing.

d. Hydrological function measurements should be documented using Technical Note #346 Erosion condition classification system and the determination of erosion condition class sheet to ensure the of erosion control methods worked during the development phase and the final pad contouring; resulting in the return of the original hydrologic function of the site.

[9] Interim reclamation may proceed if a project will be dormant for an undetermined amount of time, to provide cover to prevent erosion events and to provide forage for wildlife).

[10] Final reclamation occurs when all activities on the location have been completed, recontouring occurs and the seed mix contains all species necessary for habitat recovery.

e. Restoration of the landforms visual resource should also be documented, whether returning the location to the original visual classification under the RMP or the original topographic features.

f. Wildlife habitat communities should be monitored to ensure that the goals for sensitive wildlife species are also being met. The following tools may be used to include parameters that may not be necessary in the ESD but are useful in documenting wildlife habitat potential:

- Important Wildlife Habitats: http://gf.state.wy.us/downloads/pdf/og.pdf
- Sage-grouse range wide forum links: http://sagegrouse.ecr.gov/?link=110
- Recommendations for Development of Oil and Gas Resources within Big Game Crucial and
- Important Habitats: http://gf.state.wy.us/downloads/doc/O&G%20Recommendations%20April%202010%20with%20changes%20identified.pdf

2. Reclamation actions will be initiated before the first growing season following disturbance.

3. Following each growing season:

a. Review and complete a site-specific vegetation monitoring report for areas being reclaimed.

b. Prepare a written, site-specific prescription for actions to be implemented, including:

- Reseeding of areas not attaining reclamation success
- Soil stabilization
- Weed control needs
- Mulching/fertilization or other cultural practices prescribed for the following season.

4. If the treatment area is found, through site-specific monitoring data, to be successfully reclaimed, monitoring to confirm reclamation success will continue until the timeline determined by the ESD has been satisfied. The site will also comply with additional management needs, including control of weed infestations.

5. Within one to three years of initiation of reclamation, sites will demonstrate the establishment of a viable desirable seedling frequency. (Pro-action may want to be taken if reclamation is not successful during a good moisture year.) Desirable seedling density or frequency, compared to pre-disturbance composition information, shall consist of a vigorous, diverse, native (or otherwise approved) plant community or ecologically comparable species as approved by BLM's Authorizing Officer (AO). If this does not occur the project proponent should coordinate with the BLM, NRCS, WGFD, or other local experts to determine an alternative course of action to ensure full site recovery, the actions prescribed will be implemented as planned and further monitoring will occur as detailed beginning with the first action listed above.

If at any time pre-disturbance composition data is not suitable for reclamation success determinations, the project proponent may select a desired plant community in the reference state from the ESD State and Transition model.

Reporting

The project proponent will provide the BLM with an annual report for all sites disturbed. The report will include:

- Copies of the completed individual site review forms or a BLM-approved electronic report.

- A summary of monitoring data and results, including:

  - Individual site reclamation monitoring reporting data (Table A36-1)
  - Identification of sites successfully reclaimed by reclamation years (starting with the first growing season)
  - Identification of sites needing additional work or more reclamation activities (adaptive management) by reclamation year
  - Sites proposed for the end of monitoring (i.e., sites that were successfully reclaimed).

- The BLM's useable shape file(s) or geographic information system (GIS) layer(s) that details location, name, type, and extent of:

  - New disturbances
  - Unreclaimed disturbance
  - New reclamation
  - Failed or unsuccessful reclamation
  - Locations of noxious/invasive weed infestation
  - Further vegetation treatments planned (e.g., mulching, matting, and weed control).

On these shape files or GIS layers, *location* shall be given as the legal location and geo-referenced location of the site; *name*, as appears on the BLM's Application for Permit to Drill (APD), lease, or other BLM file name for the site; *extent*, as the appropriate component boundary.

QUALITATIVE MONITORING SHEET

Well Name/ Number _____

Monitoring Date _____

Company _____

Inspector _____

☐ Well Pad ☐ Access Road ☐ Pipeline ☐ Other _____

Topsoil Storage ☐ Stockpile (> 3ft) ☐ Stockpile (< 3ft) ☐ Direct Haul ☐ None

Length of Topsoil Storage (months) _____

Seeding Method ☐ Broadcast ☐ Drill ☐ Other _____

Date Seeded_____ Seed Mix_____

Soil Amendment_____ Date of Amendment Application_____

Item	Monitoring Requirement	Description	Yes	No
1	Is seed germination apparent?	Seeds have germinated, seedlings are emerging.		
2	Is the area free of undesirable materials?	Trash, construction materials, etc.		
3	Is the soil stable with no indications of subsidence, slumping and/or significant erosion?	Rills greater than 2 inches, accelerated erosion is obvious and soils are not being held by plants on site, sheet flow, head cutting in drainages, slopes occurring on or adjacent to reclaimed areas.		
4	Absence of noxious weeds?	Perennial pepperweed, Canada thistle, black henbane, leafy spurge, yellow or Dalmatian toadflax, spotted knapweed, Russian knapweed, etc.		
5	Absence of other undesirable species?	Cheatgrass, Halogeton, Russian thistle, etc.		
6	Is there evidence of good reproductive capability?	Seed production is evident. Amount of tillers, rhizomes, flowers, and/or seed stalks are comparable to the reference site. To answer yes, must have for all three plant types: grass, forb, and shrub.		

Item 7: Year of Reclamation

☐ Years 2 - 3 ☐ Years 4 - 5 ☐ Years 6 -7 ☐ Years 8+

If any of the items are answered "No" above, please identify the problem, attach explanation and photographs, and contact BLM Reclamation Specialist.

Well name and number:_____ **Date:**_____

Operator:_____ **Collector:**_____

Erosional Feature	Potentially Present Yes/ No	Identified Factors (Form 7310-12)	Possible Factor
Soil Movement			14
Surface Litter			14
Surface Rock Fragments			14
Pedestalling			14
Flow Patterns			15
Rills			14
Gullies			15
Column Totals			
Soil Surface Factor Total			
Class			

SSF	Class
1-20%	Stable
21-40%	Slight
41-60%	Moderate
61-80%	Critical
81-100%	Severe

Procedure:

1. Observe the total sample area and determine an average condition for each of the seven items above.
2. Determine if each item is potentially present as only these items will be considered.
3. For the items potentially present, indicate appropriate numerical value. (Form 7310-12)
4. Total both the weighted values and the potential values for each item.
5. Calculate the total percent SSF: (identified factors/ possible factors) X 100.
6. Indicate corresponding condition class site is in.

Comments:

Form 7310-12
Determination of Erosion Condition Class
Soil Surface Factor (SSF)

Well Name/Number: _____ Date: _____

Operator: _____ Collector: _____

Soil Movement	Depth of recent deposits around obstacles, or in microterraces; and/or depth of truncated areas, is 0 – 0.1 in (0 – 2.5 mm). **0 or 3**	Depth of recent deposits around obstacles, or in microterraces; and/or depth of truncated areas, is 0.1 – 0.2 in (2 – 5 mm). **5**	Depth of recent deposits around obstacles, or in microterraces; and/or depth of truncated areas, is 0.2 – 0.4 in. (5 – 10 mm) **8**	Depth of recent deposits around obstacles, or in microterraces; and/or depth of truncated areas, is 0.4 – 0.8 in. (10 – 20 mm) **11**	Depth of recent deposits around obstacles, or in microterraces; and/or depth of truncated areas, is > 0.8 in. (20 mm) **14**
Surface Litter	No movement, or if present, < 2% of the litter has been translocated and redeposited against obstacles. **0 or 3**	2 – 10% of the litter has been translocated and redeposited against obstacles. **6**	10 – 25% of the litter has been translocated and redeposited against obstacles. **8**	25 – 50%% of the litter has been translocated and redeposited against obstacles. **11**	> 50% of the litter has been translocated and redeposited against obstacles. **14**
Surface Rock Fragments	Depth of soil removal around the fragments, and/or depth of recent deposits around the fragments is < 0.1 in (2.5 mm). **0 or 2**	Depth of soil removal around the fragments, and/or depth of recent deposits around the fragments is 0.1 – 0.2 in. (2.5 – 5 mm). **5**	Depth of soil removal around the fragments, and/or depth of recent deposits around the fragments is 0.2 – 0.4 in. (5 – 10 mm). **8**	Depth of soil removal around the fragments, and/or depth of recent deposits around the fragments is 0.4 – 0.8 in. (10 – 20 mm). **11**	Depth of soil removal around the fragments, and/or depth of recent deposits around the fragments is > 0.8 in. (20 mm). **14**
Pedestals	Pedestals are mostly < 0.1 in (2.5 mm) high and/or have a frequency < 2 pedestals/100 ft. **0 or 3**	Pedestals are mostly 0.1 – 0.3 in. (2.5 – 8 mm) high and/or have a frequency of < 2 – 5 pedestals/100 ft. **6**	Pedestals are mostly 0.3 – 0.6 in. (8 – 15 mm) high and/or have a frequency of < 5 – 7 pedestals/100 ft. **9**	Pedestals are mostly 0.6 – 1 in. (15 – 25 mm) high and/or have a frequency of < 7 – 10 pedestals/100 ft. **11**	Pedestals are mostly > 1 in. (25 mm) high and/or have a frequency of > 10 pedestals/100 ft. **14**
Flow Patterns	If present, < 2% surface area shows evidence of recent translocation and deposition of soil & litter. **0 or 3**	2 – 10% surface area shows evidence of recent translocation and deposition of soil & litter. **6**	10 – 25% surface area shows evidence of recent translocation and deposition of soil & litter. **9**	25 – 50% surface area shows evidence of recent translocation and deposition of soil & litter. **12**	> 50% surface area shows evidence of recent translocation and deposition of soil & litter. **15**
Rills	If present, are < 0.5 in (13 mm) deep and at intervals > 10 ft. **0 or 3**	Rills are mostly .5 – 1 in. (132 – 25 mm) deep, and at intervals >10 ft. **6**	Rills are mostly 1 – 1.5 in. (25 – 38 mm) deep, and at intervals > 10 ft. **9**	Rills are mostly 1.5 – 3 in. (38 – 76 mm) deep, and at intervals >10 ft. **12**	Rills are mostly 3 – 6 in. (76 – 152 mm) deep, and at intervals > 5 ft. **14**
Gullies	If present, < 2% of the channel bed and walls show active erosion (no vegetation), gullies make up <2% total area. **0 or 3**	2 – 5% of the channel bed and walls show active erosion (no vegetation), gullies make up 2 – 5% total area. **6**	5 – 10% of the channel bed and walls show active erosion (no vegetation), gullies make up 5 – 10% total area. **9**	10 – 50% of the channel bed and walls show active erosion (no vegetation), gullies make up 10 – 50% total area. **12**	Over 50% of the channel bed and walls show active erosion (no vegetation), gullies make up >50% total area. **15**

ATTACHMENT A—RECOMMENDED RECLAMATION PRACTICES FOR ENSURING SUCCESSFUL AND TIMELY ECOSYSTEM RECLAMATION IN SAGE-GROUSE HABITAT

Recommended Best Management Practices for Handling Suitable Soils to Maintain Soil Quality

Suggestions on Stockpiling Suitable and Unsuitable Soils to Maintain Soil Quality

The methods suggested in this section have been documented to improve reclamation success; however it is up to the project proponent to utilize their judgment, expertise, and the latest research and information to achieve desired results.

Stockpiled topsoil should not be piled too deeply or too shallow. The taller or deeper the piles the more soil is buried under large amounts of pressure resulting in compaction. Soil buried deep in the pile also has little exposure to oxygen resulting in anaerobiosis; deeply buried soil also has no organic matter input. Both of these problems reduce soil quality.

Shallow or small topsoil stockpiles have large footprints on the land surface with the disadvantage of covering greater areas of undisturbed soil which will, in turn, require revegetation, resulting in a greater overall amount of disturbed soil. Smaller or shallow stockpiles also have a greater surface area per amount of soil stored which increases exposure of the stockpiled soil to wind and water erosion. The surface of soil stockpiles should always be vegetated to minimize erosion losses.

- Salvaged stockpiles of suitable soil should be no deeper than four meters (13 feet) and should be less where possible with the understanding that greater surface disturbance may occur.

- Stockpile slopes should not exceed 5:1 angles (20% slopes) to allow for seeding and minimize erosion.

- Suitable soil stockpiles should be located in areas to prevent their disturbance and contamination by project activities. They should not be placed in streambeds or ephemeral drainages where they may be washed away. They should be protected from wind erosion.

- A perimeter ditch/berm can be constructed around the stockpile for topsoil conservation and sediment control where necessary.

- All suitable soil stockpiles should be seeded with native cool season grass to provide cover and protect them from water and wind erosion. Before seeding, the stockpile may be scarified along contours to minimize wind and water erosion.

- If soil horizons or layers are to be stratified during soil salvage (stripping) operations, soil maps should be made of the well pad area to identify depths of soil horizons and surface slope. The area to be cleared of soils should then be divided into strips the size of the blades or equipment being used for soil removal. The depth of soil removal from each swath should be clearly marked so that equipment operators are removing a uniform layer from each strip. After the topsoil is removed from the area in this manner, the subsoil can then be removed in the same fashion, strip by strip, each strip at a uniform depth.

Soil Amendments

- Soil amendment(s) may be used in reclamation if the soil is lacking the necessary chemical, biological, physical and /or organic materials to support sustaining growth of suitable plant materials. The soil type, soil characteristics, geographic location, along with soil mapping resources available should provide the information necessary to define the soil amendment.

- The Project Proponent should state what applying soil amendments is intended to accomplish. Soil amendment plans should be provided, including what amendments will be applied, method of application, and timing relative to other reclamation activities (i.e. stockpiling, seeding, and ripping).

- The soil type is defined by the soil samples obtained prior to, or in some cases, after disturbance takes place. Soil amendments must be scientifically calculated based on the soil characteristics so as to provide the most cost efficient and best assurances for successful reclamation.

- Soil amendments include but are not limited to the following: Weed free grass hay, weed free wood chips or other weed free cellulosic materials, gypsum, elemental sulfur, and fertilizer.

Suggestions on Vegetation and Soil Monitoring

Examples of monitoring components are listed below:

- Reference: http://agriculture.wy.gov/forms/natres/rangelandmonitoring.pdf

Suitable Soil Inventory

- Soil characteristics may strongly influence reclamation efforts. Fundamental characterization of soils ahead of disturbance can identify potential problems, so they can be addressed during disturbance, soil stockpiling and reclamation, instead of waiting for reclamation failure.

- The phrase "suitable soil" is used mainly because of confusion over the definition of topsoil. Soil depth, pH, electrical conductivity, texture, surface features (e.g. barren, rocky, crusty, plant litter), and organic matter content are characteristics that may be used to determine if a soil is suitable. Other information may be needed. See: "Successful restoration of severely disturbed lands: Overview of critical components," B-1202, (and available for free at http://ces.uwyo.edu/PUBS/B1202.pdf.).

- Soil characteristics that can signal a high probability of reclamation problems include: pH, electrical conductivity, soil texture, surface/subsurface features, sodium adsorption ratio, calcium carbonate content, soil compaction, and saturation percentage. The listed characteristics below will be addressed by the Proponent in the site specific reclamation plan approved by the BLM.

    - Soils with pH 7.8 and higher progressively become less suitable for reclamation and will be addressed by the Operator in the site specific reclamation approved by the BLM.
    - An electrical conductivity of soil greater than eight deciSiemens per meter (dS/m) and any increase in salt content of the soil above 0.5 dS/m will progressively negatively affect the establishment and growth of plants. Soils exhibiting these characteristics will be addressed by the Operator in the site specific reclamation plan approved by the BLM.
    - Soils with textures representing clay, sand or loamy sand will be addressed by the Operator in the site specific reclamation plan approved by the BLM.
    - Surface and subsurface soil in and through the root zone dominated by coarse material greater than two millimeters in diameter and greater than 40 percent in the soil profile to be stockpiled may signify reclamation difficulties and will be considered in the site specific reclamation plan by the BLM and Proponent.

- Sodium adsorption ratio (SAR) is a key diagnostic soil trait that may be determined for soils to be disturbed and placed in the suitable soil stockpile; and will be addressed by the Operator in the site specific reclamation plan approved by the BLM.
- Calcium carbonate content (percent lime) will control the amount of plant available phosphorus and will determined in the site specific reclamation plan by the Operator and approved by the BLM.
- The soil saturation percentage will control the ability for plants to germinate and survive after reclamation actions have been taken by the Operator and will be addressed by the Operator in the site specific reclamation plan approved by the BLM.

Site Preparation

It is important to consider diversity in seedbed preparation to account for various seed sizes and establishment strategies of different species. Consideration should be given for seed-safe sites, water infiltration and collection, shade, and frost protection.

Recontouring

Trees, shrubs, and ground cover adjacent to disturbance areas but not cleared from rights-of-way (ROW) require protection from construction damage. Recontouring to preconstruction condition as well as restoration of normal surface drainage is required.

Road Reclamation Guidelines

Road reclamation guidelines are as follows:

- Determine the desired level of obliteration and reclamation. Determine whether there are alternative short- or long-term uses for roads.

- Determine short- and long-term reclamation objectives and goals. Identify the monitoring methods to determine reclamation success or failure and possible mitigation.

- Reclaim the road; the effort may include ripping and scarifying the surface, removing culverts and other flow structures, recontouring cut and fill slopes to provide for complete removal of the road, and total recontouring to the original topographic profile.

- Reclaim vegetation to standards outlined in the section on “criteria for reclamation.”

- Establish mitigation measures to remedy problems identified by monitoring.

Non-Native and Invasive Species

One of the land management agencies’ highest priorities is to promote ecosystem health, and one of the larger obstacles to achieving this goal is the rapid expansion of non-native and invasive species across public lands. Invasive plants can dominate sites and often cause long-term changes to native plant communities. If not eradicated or controlled, invasive species will jeopardize the success of reclamation. Invasive species can slow reclamation success or halt it altogether. Right-of-Way (ROW), mineral lease, mining claim, and permit holders are required to monitor and control invasive species on public land as stipulated within their permits and authorizations.

Invasive Plant Management Plan for Construction and Reclamation Activities

Disturbed sites can provide ideal opportunities for invasive plant species to propagate. Invasive plants can be transferred to the disturbed site from adjoining areas and out-compete desired vegetation during reclamation and/or spread to new areas. The best approach to combat invasive species is to use careful suitable soil handling and an appropriate seed mix. Pre-disturbance planning, including early weed management for invasive species is vital to reduce costs and ensure successful reclamation.

- Assess for noxious and invasive weed species before initiating surface disturbing activities, during disturbance, during interim and final reclamation, and after reclamation is completed.

- Web address for the Wyoming Weed and Pest Council: http://www.wyoweed.org/.

- Apply invasive species control treatments.

    - Consider clipping or shredding invasive plants to prevent re-seeding or nuisance to neighbors, when developing control treatments (NRCS 2001).

- Monitor invasive plant species at least annually to evaluate success of control treatments and determine if continued treatment is necessary.

The vegetation will consist of species included in the seed mix and/or occurring in the surrounding natural vegetation or as deemed desirable by land management agencies in review and approval of the reclamation plan. No single species will account for more than 30 percent total vegetative composition unless it is evident at higher levels in the adjacent landscape. Vegetation canopy cover production and species diversity shall approximate the surrounding undisturbed area.

Seed

On all areas to be reclaimed, seed mixtures are required to be certified noxious weed free and site specific, composed of the same native species as determined in the Desired Plant Community/ESD or early successional species consisting of pioneer species, including seasonal or annual species (that may only be evident at certain times of the year), that will lead to a similar climax community as that disturbed. Site preparation and species choices must ensure soil stability.

A Desired Plant Community/ESD species composition list must be developed for each site to ensure proper community composition, function, and structure. This will ensure that the type of vegetative community replaced is compatible with climate and soil types and should make it easier for the project proponent to successfully restore and stabilize specific sites.

Livestock palatability and wildlife habitat needs should be given consideration in seed mix formulation during reclamation within areas of important wildlife habitat (crucial winter range, sage-grouse nesting habitat, etc.); provision shall be made for the replacement of native browse and forb species. Bureau of Land Management guidance for native seed use is the BLM Manual 1745 and Executive Order (E.O.) 13112 (Invasive Species, 64 Code of Federal Regulations [CFR] 6183). In addition, specific seed mix recommendations appropriate to restore sage-grouse habitats are included at the end of this appendix from the NE and Upper Green River Sage-grouse Working Groups.

Describe Seeding Methods

- Different plant species may require different conditions (e.g. seeding depth, seed scarification, mixing, and timing) for optimal germination success. Seeding methods should match germination

characteristics of species in the seed mix and consider timing of planting to maximize germination and establishment of all reclamation species.

- The Proponent will describe when seeding will occur and specify the methods they will use for seeding, including differential handling for different species (e.g. broadcast vs. drilling vs. imprinting), and seeding depth in the site specific reclamation plan. Re-seeding may need to occur if invasive and/or noxious weeds prevent establishment of the seed mix.

A germination test for Pure Live Seed (PLS) basis should be used (http://efotg.sc.egov.usda.gov/references/public/WY/pm6.pdf).

Germination Test

A germination test samples for total viability, including the sum of all seeds (of a "kind" listed on the label) actually germinating using standard laboratory methods + hard seed and/or dormant seed.

Percent Germination: A germination test determines the capability of a seed lot to produce normal seedlings under favorable controlled conditions. Total germination is the percent germination added to the percent hard and/or dormant seed. Anything under 100 percent total germination represents the presence of dead seed and/or seed that doesn't produce a shoot or root. Germination may also be estimated by the use of a tetrazolium chloride test (TZ test) in which seeds are stained with a dye to determine viability. Viable seed with live (respirating) tissues will stain a red color. However, not all states recognize the use of a TZ test for all species.

Dormant Seed: Includes hard seed, refers to the portion of the seed sample that doesn't germinate during the seed test. Reasons for dormant seed are: 1) the seed coat is impervious to water, and/or 2) internal structures within the seed prohibit oxygen exchange. Hard seed may germinate at a later date and produce a viable plant, or it may germinate and succumb to competition, or it may never germinate at all.

The higher the germination percentage, the better. Germination of most grass species is normally above 80 percent and should not be lower than 60 percent. Germination of some native grasses, forbs, and shrubs may be lower, but can vary widely according to species.

The germination test date should also be current. Grass, forb and legume seed should be updated every nine to 18 months depending on state laws. Flower, shrub, and tree seed should be updated every nine months.

Standard Seed Mixtures

Care and planning must be taken to choose mixes and amounts that will benefit under site-specific conditions. Planning and thought must also go into selecting successful planting and site-preparation techniques. All sites must be planted with a diverse mix of grasses, forbs, and shrubs to be considered successful. The project proponent is ultimately responsible for successful restoration of disturbed sites. Seed mixes should be based on and the Desired Plant Community that is achievable according to the ESD. When appropriate native plant materials are not commercially available, use of local collections or adapted species that perform similar function may be used in lieu of the exact species described the ESD that has been shown to be successful in previous trials. Return of cover should be gauged by comparison with actual pre-disturbance site conditions and/or reference areas. Alternate seed mixes can be submitted by the project proponent to the BLM for review and approval prior to use. The final goal is to restore disturbed sites so that they closely resemble predisturbance native plant communities. Some standard seed mixes are available for the Field Office and contain only native species. If the use of a non-native species is desired, documentation of the need is required by the BLM policy. Non-native species may be considered for erosion and weed control. Seed mixtures consisting of sterile annual cover crops, such as tricale hybrid, can be

used. Non-native species may be considered in some circumstances to aid the revegetation of native species as outlined in the Wyoming Reclamation Plan. As stated in the Wyoming Reclamation Plan (IM WY2012-032) "Select non-native plants only as an approved short term and non-persistent (i.e. sterile) alternative to native plant materials. Ensure the non-natives will not hybridize, displace, or offer long-term competition to the endemic plants, and are designed to aid in the re-establishment of native plant communities." Follow-up seeding or corrective erosion control measures will be required on areas of surface disturbance that fail to meet reclamation success standards within a reasonable time.

Seed Mixes

The need to provide multifunctional and sustainable seed mixes for interim and final reclamation and soil stability is driven by a desire to increase potential for successful and timely re-vegetation and site stability. Plant diversity and habitat functionality are directly impacted by the seed choices applied to an area slated to be reclaimed or restored. To maintain as much stability and ecological function this section makes recommendations to specifically aid a proponent's selection process.

- Select site-appropriate, adapted native plant materials based on the ESD, Desired Plant Community, and commercially available native species adapted to the species identified in the Desired Plant Community/ESD. Seeds may be obtained from commercial sources of certified weed-free seed mixes. Alternatively, local collections may be used provided they are collected in an area without weedy species. Any seed used for reclamation should be certified weed free and have the same standards required as commercially purchased seed.

- Perennial naturalized species may be used when attempts to reclaim using native plants have not succeeded for a minimum of five full growing seasons. Reclamation should succeed using native species if soils are properly managed, precipitation is not limiting, seed mixes are carefully selected, and seeded areas protected from grazing.

- Based upon site-specific conditions, a decision may be made to use non-natives sooner than identified above and will be used in only unique conditions defined in the site specific reclamation plan, and approved by the Authorizing/Line Officer.

Mulch

Use of mulch during reclamation may enhance chances for successful vegetation reestablishment. Mulches can help control wind and water erosion, retain and collect seed, increase and prolong soil water capacity, and add organic compounds to the soil. Mulches are best applied after seeding to ensure proper seed contact with soil. Mulch may include hay, small-grain straw, wood fiber, live mulch, cotton, jute, or synthetic netting. Straw mulch should contain fibers long enough to facilitate crimping and provide the greatest cover.

When mulching with cereal grain straw or grass hay, apply in sufficient amounts to provide 70 percent ground cover. Mulch rate shall be determined using current erosion prediction technology to reach the soil erosion objective (NRCS 2005).

When mulching with wood products such as wood chips, bark, or shavings or other wood materials, apply to a 2-inch thickness if the soil is not well-drained and to a 3- to 4-inch thickness if drainage is good. More finely textured mulches, which allow less oxygen penetration than coarser materials, should be no thicker than one or two inches. The mulch material shall provide no greater than 80 percent ground cover in order to ensure adequate air drainage (NRCS 2005).

Gravel or other inorganic material shall be applied approximately two inches thick and shall consist of pieces 0.75 inch to two inches in diameter. The mulch material shall provide no more than 90 percent ground cover in order to ensure adequate air drainage (NRCS 2005).

Mulch shall be applied at a rate that achieves 50 percent ground cover to provide protection from erosion and runoff and yet allow adequate light and air penetration to the seedbed to ensure proper germination, emergence, and disease suppression (NRCS 2005).

Any mulch used must be certified free from noxious or invasive weed seeds.

Live Plantings

Live plants can be planted on disturbed sites and, with proper site preparation, can greatly enhance restoration efforts and shorten time frames. Proponents can buy bare root and container stock directly from vendors or can contract seed collection and growth from local growers. Another strategy is to use an excavator to collect clumps of plants from the site and plant them either on reserved topsoil piles and/or on restoration sites during recontouring. These clumps can provide native seed and soil flora as well as collect precipitation and provide shade for newly emerging plants.

Appendix N – Predator Management

Introduction

The U.S. Department of the Interior, Bureau of Land Management (BLM) will implement strategies and techniques in land management decisions that minimize the threat predators pose to sage-grouse. The land management agencies will also support and encourage other landowners and agencies in their efforts to minimize impacts from predators on sage-grouse where needs have been documented.

Required Design Features Relative to Sage-grouse Predators in Land Management Decisions

Project proponents are encouraged to include all appropriate conservation measures in their proposals. The Bureau of Land Management (BLM) will require application of all appropriate conservation measures, warranted by site-specific analysis, in order to avoid, minimize, rectify, reduce, or compensate for impacts. Conservation measures not included in project proposals and determined appropriate from the site-specific analysis will be required as Conditions of Approval (COAs), stipulations, terms and conditions, etcetera. Additional COAs developed through consultation with other federal, state, and local regulatory and resource agencies may be applied when supported by site-specific analysis.

Required Design Features include but are not limited to the following:

- Prohibit open dumps.
- Require appropriate disposal of animal carcasses.
- Construct or modify vertical structures in a manner that prevents nesting or perching by scavengers or raptors.
- Require raptor perch deterrents on power poles as a component of permit issuance or renewal according to Avian Power Line Interaction Committee (APLIC) 2012 standards (*APLIC 2012. Suggested Practices for Raptor Protection on Power Lines* and *Mitigating Bird Collisions with Power Lines.* http://aplic.org).
- Remove vertical structures, such as utility poles, buildings, or windmills, where feasible and where these structures are either no longer necessary or operational.
- Minimize creation of new roads.
- Remove roads, unimproved roads, and two-tracks in core sage-grouse habitats according to travel management plans and restore sagebrush habitat.
- Dispose of all garbage in containers that cannot be opened by animals.
- Inventory and monitor predator populations by project proponents.
- Identify and replace operational windmills with solar pumps.